United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of the Interior, Bureau of Land Management, and New Mexico Agricultural Experiment Station

Soil Survey of Guadalupe County, New Mexico

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

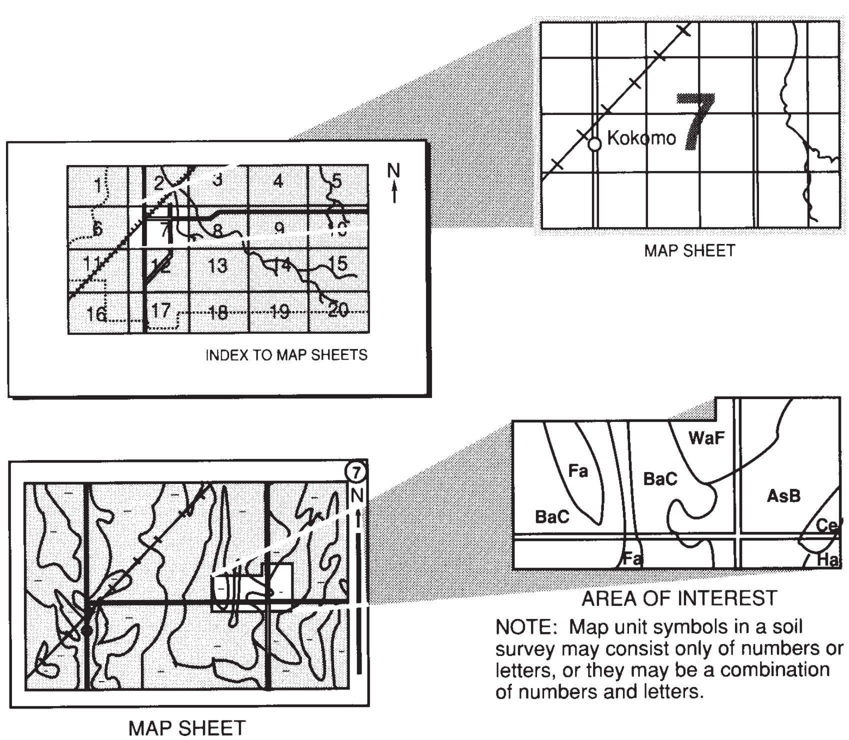
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1989. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1990. This survey was made cooperatively by the Natural Resources Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the New Mexico Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Guadalupe Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Grazing deer in an area of Bluhol loam, 0 to 2 percent slopes, south of Santa Rosa.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

This soil survey contains information that affects land use planning in Guadalupe County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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State Conservationist
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Soil Survey of Guadalupe County, New Mexico

By Robert A. Hill, Natural Resources Conservation Service

Fieldwork by Robert A. Hill, Kenneth F. Scheffe, and Tom McCarty, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
United States Department of the Interior, Bureau of Land Management, and
New Mexico Agricultural Experiment Station

GUADALUPE COUNTY is in the east-central part of New Mexico (fig. 1). It has a total area of 1,941,785 acres, or 3,034 square miles. Santa Rosa, the largest town in the survey area, is the county seat. In 2000, the population of the county was 4,680.

Most of the survey area is in the western part of the Great Plains, and the rest is in the adjacent hills. The survey area is dominated by gently sloping to gently rolling topography. Elevations within the survey area range between 4,200 and 6,200 feet. The Pecos River flows through the approximate center of the county in a southeasterly direction.

The area north and east of the Pecos River has a more variable topography than the rest of the survey area. This part is characterized by gently undulating to rolling uplands interspersed with relatively smooth valleys and basins, and it includes broken landscapes and escarpments along the Pecos River and major drainageways. A few small areas along the eastern boundary of the survey area occur on the Southern High Plains. They are part of an area of extensive gently sloping and smooth plains that extends southeastward. These areas generally terminate as abrupt westward-facing escarpments that are typically more than 100 feet high. Small isolated mesas and hills are also characteristic features of the area north and east of the Pecos River. They are of variable size and undoubtedly are remnants of a higher plain remaining after the surrounding materials eroded away. Slopes decrease and merge away from the escarpments and mesas, forming gently sloping to undulating topography.

South and west of the Pecos River, the area is dominated by nearly level to strongly sloping and undulating topography. A few breaks and escarpments occur along the major drainageways. The major tributaries in this area are the Pintada Arroyo and the Canyon Blanco. The terrain rises gradually to the west to an elevation of 6,200 feet near the Torrance County border. Karst topography consisting of caliche-capped limestone is the dominant land feature in the southwestern part of the survey area.

Most runoff in the survey area enters the Pecos River drainage system, which originates in the Sangre de Cristo Mountains to the northwest. A small portion of runoff in the northeastern part of the survey area enters the Canadian River system.

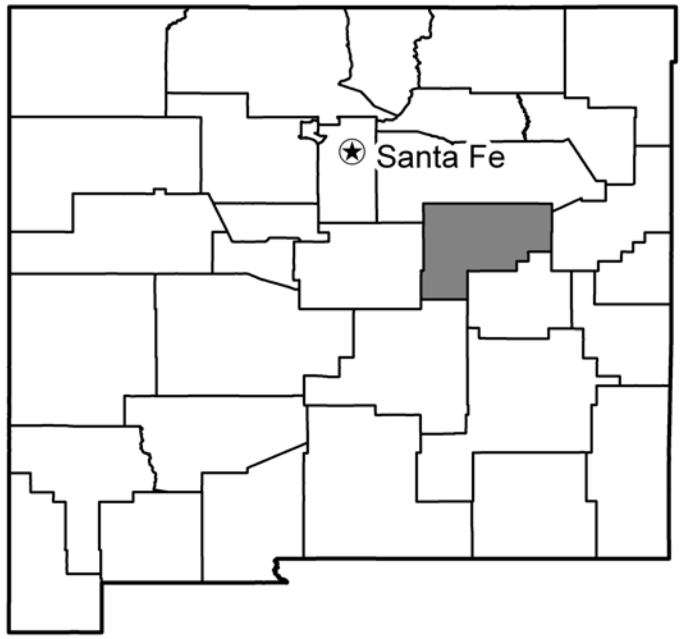

Figure 1.—Location of Guadalupe County in New Mexico.

The soil maps for this survey area were prepared at two different levels of detail. The low-detail maps cover the rangeland in the survey area. The high-detail maps cover about 28,780 acres and can be used to make interpretations for intensive uses of the soils, such as irrigated farming and urban development.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps of adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, the intensity of mapping, or the extent of soils within the survey area.

General Nature of the Survey Area

This section provides general information about Guadalupe County. It describes history and climate.

History

Paleo-Indian people were living in New Mexico by 10,000 B.C. Family groups of nomadic hunters crossed the eastern woodlands and grasslands in search of the mastodons and prehistoric bison. Evidence of these people can be found in the lithic materials that remain at scattered locations. Arrowheads include Clovis, Folsom, Plainview, and Eden point types.

After the Paleo period ended, about 8,000 years ago, the indigenous people began to settle into areas for longer periods of time. This period, known as the Archaic, lasted for about 6,000 years. During this span of time, the people adapted their existence from one of nomadic hunter to one of hunter-gatherer. Eventually, horticulture and agriculture began to be practiced along the river bottoms, leading to more stable settlements and more reliable food resources. The largest concentration of Archaic settlements in survey area was in the Santa Rosa Reservoir District along the Pecos River.

Over time, the indigenous people or immigrants changed the culture back to one of hunting and gathering. This was probably due to their utilization of the large bison

herds living on the eastern plains. In 1541, when the Coronado expedition crossed the eastern plains, various bands of Apache and Comanche Indians inhabited the area and their life revolved around the bison herds.

Spanish expeditions in 1582 and 1583 followed the Pecos River and entered the area of present-day Guadalupe County. A group led by Antonio de Espejo entered New Mexico to rescue two friars who had stayed behind to convert the Indians after previous Spanish explorations. After learning of their deaths, the party spent some time searching for mineral wealth in the northern mountains. Another party led by Gaspar Castano de Sosa, lieutenant governor and captain general of Nuevo Leon, entered New Mexico via the Pecos River. This group, consisting of 160 people, planned to settle near the Santa Domingo Pueblo but were arrested and removed by soldiers for undertaking the expedition without a royal license.

As more Spaniards began to colonize New Mexico, there was a need to establish communities away from the Rio Grande Valley. One of the ways to encourage settlement was through a system of land grants. Tracts of land were given by the government to individuals or groups who agreed to establish settlements in outlying areas. In 1824, a Mexican Land Grant, the Hacienda de Agua Negra Land Grant, was given to Don Antonio Sandoval. Another ranch was established by Don Celso Baca in 1865 on El Rito Creek, east of the Pecos River. Eventually the Baca holdings included most of the property of the Hacienda de Aqua Negra Land Grant.

During the 1860's, Texas cattlemen moved onto the eastern plains of New Mexico. Oliver Loving helped to develop the Goodnight-Loving Trail. This trail was used to move the longhorn cattle along the Pecos River to railheads at Denver, Colorado, and Cheyenne, Wyoming. The trail was used from 1866 to 1880.

In 1891, Guadalupe County was created by the New Mexico Territorial Legislation. The county was formed from the southern portion of San Miguel County. It covered 2,999 square miles. Puerto de Luna was the first county seat, from 1891 to 1903. The county seat was later changed to its present location in Santa Rosa.

In 1902, the Rock Island and El Paso Railroad Company laid track through the Santa Rosa area. The railroad brought 4,000 workers. This led to the formation of the town and economic prosperity. When the railroad crews left in 1910, the town dwindled to a population of 1,000 and the economy returned to ranching and farming.

In the 1930's, Route 66 was established, bringing ever-increasing numbers of travelers and tourists through the region. Santa Rosa continues to be the largest city in the county, with a population exceeding 4,000. Known today as the "City of Natural Lakes," the town has water recreational opportunities at various locations. Water, both from the Pecos River and the natural springs, continues to be an important resource for the people living on the eastern plains.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Santa Rosa, New Mexico, in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 41.0 degrees F and the average daily minimum temperature is 26.0 degrees. The lowest temperature on record, which occurred at Santa Rosa on January 13, 1963, was -25 degrees. In summer, the average temperature is 75.5 degrees and the average daily maximum temperature is 91.0 degrees. The highest temperature, which occurred at Santa Rosa on June 24, 1990, was 109 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal

monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 15.71 inches at Santa Rosa and between 14 and 16 inches across nearly all of Guadalupe County. Of the 15.71 inches at Santa Rosa, about 12.6 inches, or 80 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 3.63 inches at Santa Rosa, recorded on April 30, 1999. Thunderstorms occur on about 40 days each year, and most occur between May and September. More than 22 days in July and August typically have thunderstorms.

The average seasonal snowfall at Santa Rosa is 15.1 inches. It is slightly greater over northernmost portions of the county; it is about 31 inches per year in Dilia and about 21 inches per year in Newkirk. The greatest snow depth at any one time during the period of record at Santa Rosa was 17 inches, recorded on February 9, 1986. On average, about 7 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record at Santa Rosa is 15.0 inches, recorded on February 4, 1964.

The average relative humidity in mid-afternoon is about 40 percent in the winter and between 15 and 20 percent in the summer. Humidity is higher at night, and the average at dawn is about 70 percent in winter and 45 percent in summer. The sun shines about 75 to 80 percent of the time possible in summer and about 65 to 70 percent in winter. The prevailing wind is from the northwest in winter and early spring and from the south and southeast the rest of the year. Average windspeed is highest, around 12 miles per hour, in April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of

rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. The broadly defined units are indicated by map unit numbers 100 and above. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Redona-Hilken-Conger

Setting

Depth class: Very shallow to deep
Drainage class: Well drained
Location: Eastern and southeastern parts of the county
Landform position: Mesa tops and hills
Present vegetation: Grasses and shrubs
Elevation range: 4,200 to 5,300 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 5 percent

Composition

Extent of the map unit in the county: 4 percent
Extent of the components in the map unit:
Redona and similar soils—45 percent
Hilken and similar soils—27 percent
Conger and similar soils—12 percent
Minor inclusions—16 percent

Minor Inclusions

- Montoya soils in swales and on the lower toeslopes
- Karde soils on dunes adjacent to playa lakes

Soil Properties and Qualities

Redona

Typical profile:
0 to 7 inches—brown fine sandy loam

7 to 23 inches—brown sandy clay loam
23 to 37 inches—strong brown sandy clay loam
37 to 60 inches—pinkish white sandy clay loam

Depth class: Deep (60 inches or more)
Parent material: Mixed eolian and alluvial materials from red bed sandstone and shale
Drainage class: Well drained
Permeabilty: Moderate

Hilken

Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 21 inches—yellowish red sandy clay loam
21 to 27 inches—yellowish red very gravelly sandy clay loam
27 to 37 inches—indurated caliche

Depth class: Moderately deep (20 to 40 inches)
Parent material: Eolian and alluvial materials from mixed sources
Drainage class: Well drained
Permeabilty: Moderate

Conger

Typical profile:
0 to 5 inches—brown loam
5 to 13 inches—brown loam
13 to 23 inches—indurated caliche

Depth class: Very shallow or shallow (8 to 20 inches)
Parent material: Alluvium from mixed sources
Drainage class: Well drained
Permeabilty: Moderate

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Hazard of soil blowing and depth to indurated caliche in areas of the Hilken and Conger soils

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie with scattered, stunted juniper trees on the tops of mesas and the rock and ledge side slopes
Characteristic wildlife: Ravens and hawks, which nest among the ledges; coyote, bobcat, fox, and woodrats, which den among the rocks

2. Sparks-Slaughter

Setting

Depth class: Very shallow or shallow and deep
Drainage class: Well drained
Location: Eastern edge of the county
Landform position: High plains
Present vegetation: Grasses
Elevation range: 4,000 to 5,300 feet
Average annual precipitation: 15 to 17 inches

Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 2 percent

Composition

Extent of the map unit in the county: 1 percent
Extent of the components in the map unit:
Sparks and similar soils—56 percent
Slaughter and similar soils—21 percent
Minor inclusions—23 percent

Minor Inclusions

- Soils that are similar to the Slaughter soils but that have indurated caliche below a depth of 20 inches

Soil Properties and Qualities

Sparks

Typical profile:
0 to 8 inches—brown loam
8 to 19 inches—brown clay
19 to 39 inches—reddish brown clay loam
39 to 60 inches—light reddish brown and pink clay loam
Depth class: Deep (60 inches or more)
Parent material: Eolian and alluvial materials from Ogallala outwash
Drainage class: Well drained
Permeabilty: Slow

Slaughter

Typical profile:
0 to 6 inches—reddish brown loam
6 to 16 inches—reddish brown clay loam
16 to 26 inches—indurated caliche
Depth class: Very shallow or shallow (9 to 20 inches)
Parent material: Eolian and alluvial material from Ogallala outwash
Drainage class: Well drained
Permeabilty: Moderately slow

Use and Management

Major Uses: Dryland production of crops, including wheat and sorghum, and livestock grazing on wheat pasture and rangeland
Major Limitations for Uses: Hazard of soil blowing and depth to indurated caliche in areas of the Slaughter soils

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie and cropland
Characteristic wildlife: Pronghorn antelope, badger, blacktailed jackrabbit, and meadowlark
Other wildlife: Wintering waterfowl and sandhill cranes, which use cropland

Figure 2.—An area of Regnier-Rock outcrop-Lacoca complex, 30 to 80 percent slopes. This area is subject to geologic erosion due to the steep slopes.

3. Regnier-Rock outcrop-Lacoca

Setting

Depth class: Very shallow and shallow
Drainage class: Well drained
Location: Areas along the Pecos River and its tributaries
Landform position: Escarpments, ledges, and hills
Present vegetation: Grasses and shrubs
Elevation range: 4,200 to 5,300 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 80 percent (fig. 2)

Composition

Extent of the map unit in the county: 6 percent
Extent of the components in the map unit:
Regnier and similar soils—35 percent
Rock outcrop—30 percent
Lacoca and similar soils—20 percent
Minor inclusions—15 percent

Minor Inclusions

- The deep Gallen, Minneosa, and La Lande soils in the less sloping areas

Soil Properties and Qualities

Regnier

Typical profile:
0 to 3 inches—reddish brown loam
3 to 8 inches—reddish brown clay loam
8 to 12 inches—reddish brown clay loam
12 to 22 inches—reddish brown shale
Depth class: Shallow (12 to 20 inches)
Parent material: Colluvial and alluvial materials from sandstone and shale
Drainage class: Well drained
Permeabilty: Moderately slow

Rock outcrop

This part of the map unit consists of barren or nearly barren areas of sandstone, shale, and indurated caliche.

Lacoca

Typical profile:
0 to 8 inches—light brown fine sandy loam
8 to 18 inches—sandstone
Depth class: Very shallow or shallow (4 to 20 inches)
Parent material: Colluvial and alluvial materials from sandstone
Drainage class: Well drained
Permeabilty: Moderate

Use and Management

Major Uses: Livestock grazing, wildlife habitat, and small irrigated areas on the terraces of the Pecos River
Major Limitations for Uses: Shallow depth to bedrock and the slope

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Intermingled aquatic, wetland, and riparian habitats; cropland; areas of rocks and ledges; and juniper woodlands
Characteristic wildlife: Many animals use this map unit because of the excellent variety of habitats; migrating songbirds, shorebirds, and waterfowl seasonally use the river and riparian zones

4. Lacoca-San Jon-Rock outcrop

Setting

Depth class: Very shallow or shallow and moderately deep
Drainage class: Well drained
Location: Central and eastern parts of the county
Landform position: Ridges, benches, and hills (fig. 3)
Present vegetation: Grasses and shrubs
Elevation range: 4,200 to 5,300 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 25 percent

Figure 3.—Sinkholes are common in Guadalupe County. This sinkhole is in an area of San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes.

Composition

Extent of the map unit in the county: 18 percent
Extent of the components in the map unit:
Lacoca and similar soils—31 percent
San Jon and similar soils—27 percent
Rock outcrop—14 percent
Minor inclusions—28 percent

Minor Inclusions

- The moderately deep Hassell soils on hills
- The deep gypsiferous Hollomex and Reeves soils on hills

Soil Properties and Qualities

Lacoca

Typical profile:
0 to 8 inches—light brown fine sandy loam
8 to 18 inches—sandstone
Depth class: Very shallow or shallow (4 to 20 inches)
Parent material: Alluvial and colluvial materials from sandstone
Drainage class: Well drained
Permeabilty: Moderate

San Jon

Typical profile:
0 to 6 inches—brown loam
6 to 10 inches—reddish yellow loam
10 to 20 inches—light brown clay loam
20 to 33 inches—light brown clay loam
33 to 44 inches—sandstone
Depth class: Moderately deep (20 to 40 inches)
Parent material: Eolian and alluvial materials derived from sandstone and shale
Drainage class: Well drained
Permeabilty: Moderately slow

Rock outcrop

This part of the map unit consists of barren or nearly barren areas of exposed sandstone and shale.

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Hazard of soil blowing, extent of Rock outcrop, and depth to bedrock in the Lacoca soils

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie (trees occurring along arroyos and around stock tanks provide nesting sites for raptors)
Characteristic wildlife: Wildlife populations are low and have low species diversity; pronghorn antelope, coyote, and blacktailed jackrabbit are common

5. Travessilla-Hagerman-Rock outcrop

Setting

Depth class: Very shallow or shallow and moderately deep
Drainage class: Well drained
Location: Western part of the county
Landform position: Mesas, hills, and areas along escarpments
Present vegetation: Grasses, shrubs, and scattered trees
Elevation range: 4,700 to 6,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 52 to 55 degrees F
Average frost-free period: 160 to 180 days
Slope range: 1 to 75 percent

Composition

Extent of the map unit in the county: 6 percent
Extent of the components in the map unit:
Travessilla and similar soils—46 percent
Hagerman and similar soils—20 percent
Rock outcrop—16 percent
Minor inclusions—18 percent

Minor Inclusions

- The deep Flugle and Clovis soils on mesas and toeslopes
- The very shallow or shallow Tuloso soils on ridges and hills

Soil Properties and Qualities

Travessilla

Typical profile:
  0 to 6 inches—brown fine sandy loam
  6 to 12 inches—light brown fine sandy loam
  12 to 22 inches—sandstone
Depth class: Very shallow or shallow (4 to 20 inches)
Parent material: Eolian sediments from mixed sources
Drainage class: Well drained
Permeabilty: Moderately rapid

Hagerman

Typical profile:
  0 to 7 inches—brown loam
  7 to 21 inches—brown clay loam
  21 to 28 inches—light brown clay loam
  28 to 38 inches—sandstone
Depth class: Moderately deep (20 to 40 inches)
Parent material: Alluvial and eolian materials derived from mixed sources
Drainage class: Well drained
Permeabilty: Moderate

Rock outcrop

This part of the map unit constists of barren or nearly barren areas of sandstone and shale.

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Hazard of soil blowing, extent of Rock outcrop, the slope, and depth to bedrock

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie interspersed with shrub and juniper woodlands
Characteristic wildlife: Ravens and hawks, which nest among the ledges; coyote, bobcat, gray fox, and woodrats, which nest among the rocks; mule deer in areas of drainageways that contain large amounts of shrubs and juniper

6. Winona-Gabaldon

Setting

Depth class: Very shallow or shallow and deep
Drainage class: Well drained
Location: Southwestern part of the county
Landform position: Hills and depressions in karst topography (fig. 4)
Present vegetation: Grasses and shrubs
Elevation range: 4,700 to 6,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 52 to 55 degrees F
Average frost-free period: 160 to 180 days
Slope range: 1 to 30 percent

Figure 4.—An area of Winona-Gabaldon complex, 0 to 15 percent slopes. The Winona soil is very shallow or shallow to limestone and is generally cobbly or channery with limestone coarse fragments. The deep Gabaldon soil is in depressions and has very few coarse fragments.

Composition

Extent of the map unit in the county: 3 percent
Extent of the components in the map unit:
Winona and similar soils—65 percent
Gabaldon and similar soils—14 percent
Minor inclusions—21 percent

Minor Inclusions

- The deep Silver soils in swales, in pockets, and on the lower toeslopes
- The shallow Pastura soils on mesas
- Rock outcrop on hills

Soil Properties and Qualities

Winona

Typical profile:
0 to 4 inches—very channery fine sandy loam
4 to 12 inches—light brownish gray very cobbly fine sandy loam
12 to 22 inches—limestone
Depth class: Very shallow or shallow (4 to 20 inches)
Parent material: Eolian and alluvial materials from limestone
Drainage class: Well drained
Permeabilty: Moderate

Gabaldon

Typical profile:
0 to 4 inches—dark grayish brown silt loam
4 to 13 inches—grayish brown silty clay loam

13 to 25 inches—grayish brown silty clay loam
25 to 60 inches—brown silty clay loam

Depth class: Deep (60 inches or more)
Parent material: Alluvium derived from limestone
Drainage class: Well drained
Permeabilty: Moderately slow

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: The slope, depth to bedrock, and hazard of soil blowing in areas of the Gabaldon soils

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie
Characteristic wildlife: Large populations of pronghorn antelope, coyote, swift fox, and blacktailed jackrabbit

7. Palo-Neso-Hilken

Setting

Depth class: Very shallow or shallow and moderately deep
Drainage class: Well drained
Location: South-central and southeastern parts of the county
Landform position: Mesas and hills
Present vegetation: Grasses
Elevation range: 4,200 to 5,300 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 5 percent

Composition

Extent of the map unit in the county: 3 percent
Extent of the components in the map unit:
Palo and similar soils—49 percent
Neso and similar soils—16 percent
Hilken and similar soils—16 percent
Minor inclusions—19 percent

Minor Inclusions

- The deep Berwolf and Redona soils on toeslopes and footslopes

Soil Properties and Qualities

Palo

Typical profile:
0 to 4 inches—reddish brown fine sandy loam
4 to 11 inches—reddish brown sandy clay loam
11 to 16 inches—reddish brown gravelly sandy clay loam
16 to 26 inches—indurated caliche

Depth class: Very shallow or shallow (9 to 20 inches)
Parent material: Eolian and alluvial materials from mixed sources

Drainage class: Well drained
Permeabilty: Moderate

Neso

Typical profile:
0 to 4 inches—brown gravelly fine sandy loam
4 to 12 inches—brown very gravelly fine sandy loam
12 to 22 inches—indurated caliche
Depth class: Very shallow or shallow (8 to 14 inches)
Parent material: Eolian and alluvial materials from mixed sources
Drainage class: Well drained
Permeabilty: Moderately rapid

Hilken

Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 21 inches—yellowish red sandy clay loam
21 to 27 inches—yellowish red very gravelly sandy clay loam
27 to 37 inches—indurated caliche
Depth class: Moderately deep (20 to 40 inches)
Parent material: Eolian and alluvial materials from mixed sources
Drainage class: Well drained
Permeabilty: Moderate

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Shallow and moderate depths to indurated caliche and hazard of soil blowing

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie
Characteristic wildlife: Pronghorn antelope, coyote, swift fox, and blacktailed jackrabbit

8. Pastura-Harvey-Cardenas

Setting

Depth class: Very shallow, shallow, and deep
Drainage class: Well drained
Location: Western and southwestern parts of the county
Landform position: Hills
Present vegetation: Grasses
Elevation range: 4,700 to 6,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 52 to 55 degrees F
Average frost-free period: 160 to 180 days
Slope range: 0 to 9 percent

Composition

Extent of the map unit in the county: 17 percent
Extent of the components in the map unit:
Pastura and similar soils—55 percent
Harvey and similar soils—17 percent

Cardenas and similar soils—7 percent
Minor inclusions—21 percent

Minor Inclusions

- The deep Clovis soils on toeslopes and footslopes
- Gabaldon soils in sinkholes
- The shallow Winona soils on shoulder slopes

Soil Properties and Qualities

Pastura

Typical profile:
0 to 4 inches—brown loam
4 to 14 inches—light brown loam
14 to 24 inches—indurated caliche
Depth class: Very shallow or shallow (5 to 20 inches)
Parent material: Eolian and alluvial materials from mixed sources
Drainage class: Well drained
Permeabilty: Moderate

Harvey

Typical profile:
0 to 10 inches—brown loam
10 to 22 inches—pink loam
22 to 38 inches—light reddish brown loam
38 to 60 inches—yellowish red sandy clay loam
Depth class: Deep (60 inches or more)
Parent material: Eolian and alluvial materials from sandstone, shale, and limestone
Drainage class: Well drained
Permeabilty: Moderate

Cardenas

Typical profile:
0 to 4 inches—brown loamy fine sand
4 to 14 inches—brown fine sandy loam
14 to 24 inches—indurated caliche
Depth class: Shallow (10 to 20 inches)
Parent material: Eolian and alluvial materials from mixed sources
Drainage class: Well drained
Permeabilty: Moderately rapid

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Depth to indurated caliche in the Pastura and Cardenas soils and the hazard of soil blowing

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie with a shrub component; widely scattered playas which support wetlands only in wet years
Characteristic wildlife: Pronghorn antelope, coyote, and blacktailed jackrabbit; migrating waterfowl use ponded playas for resting and feeding areas

9. Tuloso-Flugle-Deama

Setting

Depth class: Very shallow or shallow and deep
Drainage class: Well drained
Location: Northwestern part of the county
Landform position: Mesas and hills
Present vegetation: Grasses and shrubs
Elevation range: 4,700 to 6,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 52 to 55 degrees F
Average frost-free period: 160 to 180 days
Slope range: 1 to 25 percent

Composition

Extent of the map unit in the county: 2 percent
Extent of the components in the map unit:
Tuloso and similar soils—29 percent
Flugle and similar soils—22 percent
Deama and similar soils—19 percent
Minor inclusions—30 percent

Minor Inclusions

- The shallow Travessilla soils on ridges
- The moderately deep Hagerman soils on footslopes
- Rock outcrop on hills

Soil Properties and Qualities

Tuloso

Typical profile:
0 to 2 inches—brown very cobbly fine sandy loam
2 to 11 inches—brown very cobbly fine sandy loam
11 to 21 inches—sandstone
Depth class: Very shallow or shallow (6 to 20 inches)
Parent material: Alluvial materials from sandstone
Drainage class: Well drained
Permeabilty: Moderately rapid

Flugle

Typical profile:
0 to 6 inches—reddish brown fine sandy loam
6 to 19 inches—reddish brown sandy clay loam
19 to 31 inches—yellowish red sandy clay loam
31 to 60 inches—yellowish red fine sandy loam
Depth class: Deep (60 inches or more)
Parent material: Alluvial and eolian materials derived from sandstone and shale
Drainage class: Well drained
Permeabilty: Moderate

Deama

Typical profile:
0 to 7 inches—brown very cobbly loam
7 to 14 inches—pale brown very cobbly loam

14 to 17 inches—very pale brown very gravelly fine sandy loam
17 to 27 inches—limestone

Depth class: Very shallow or shallow (6 to 20 inches)
Parent material: Eolian and alluvial materials derived from limestone
Drainage class: Well drained
Permeabilty: Moderate

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Depth to bedrock in the Tuloso and Deama soils and the hazard of soil blowing

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Aquatic, wetland, and riparian habitats; cropland; escarpments areas; and woodlands
Characteristic wildlife: Mule deer, gray fox, and scrub jay in the woodlands; migratory songbirds and waterfowl inhabit areas along the river and riparian zones

10. Tucumcari-Chispa-La Lande

Setting

Depth class: Deep
Drainage class: Well drained
Location: Central and eastern parts of the county
Landform position: Hills
Present vegetation: Grasses
Elevation range: 4,200 to 5,300 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 58 to 60 degrees F
Average frost-free period: 180 to 200 days
Slope range: 0 to 15 percent

Composition

Extent of the map unit in the county: 17 percent
Extent of the components in the map unit:
Tucumcari and similar soils—34 percent
Chispa and similar soils—26 percent
La Lande and similar soils—15 percent
Minor inclusions—25 percent

Minor Inclusions

- The deep Montoya and Bluhol soils in swales and depressions
- Berwolf soils on mesas

Soil Properties and Qualities

Tucumcari

Typical profile:
0 to 5 inches—reddish brown loam
5 to 49 inches—reddish brown and light reddish brown clay loam and clay
49 to 60 inches—reddish brown clay

Depth class: Deep (60 inches or more)

Parent material: Alluvial and eolian materials derived from red bed sandstone and shale
Drainage class: Well drained
Permeabilty: Slow

Chispa

Typical profile:
0 to 8 inches—brown fine sandy loam
8 to 22 inches—light brown loam
22 to 60 inches—pink and light brown loam
Depth class: Deep (60 inches or more)
Parent material: Alluvial and eolian materials derived from red bed shale and sandstone
Drainage class: Well drained
Permeabilty: Moderate

La Lande

Typical profile:
0 to 4 inches—reddish brown loam
4 to 17 inches—reddish brown loam
17 to 60 inches—light reddish brown loam
Depth class: Deep (60 inches or more)
Parent material: Alluvial and eolian materials derived from red bed sandstone and shale
Drainage class: Well drained
Permeabilty: Moderate

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Hazard of soil blowing

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie
Characteristic wildlife: Pronghorn antelope, coyote, and blacktailed jackrabbit; tree-lined drainageways are important for nesting birds; wildlife populations are low and there is low species diversity

11. Clovis-Harvey-Palma

Setting

Depth class: Deep
Drainage class: Well drained
Location: Western part of the county
Landform position: Hills
Present vegetation: Grasses and shrubs
Elevation range: 4,700 to 6,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 52 to 55 degrees F
Average frost-free period: 160 to 180 days
Slope range: 0 to 15 percent

Composition

Extent of the map unit in the county: 23 percent

Extent of the components in the map unit:
Clovis and similar soils—50 percent
Harvey and similar soils—13 percent
Palma and similar soils—12 percent
Minor inclusions—25 percent

Minor Inclusions

- The deep Mido and Manzano soils on toeslopes and terraces
- The very shallow or shallow Pastura soils on footslopes

Soil Properties and Qualities

Clovis

Typical profile:
0 to 7 inches—reddish brown loam
7 to 20 inches—reddish brown clay loam
20 to 31 inches—reddish brown clay loam
31 to 60 inches—pink loam
Depth class: Deep (60 inches or more)
Parent material: Alluvial and eolian materials from sandstone, shale, and limestone
Drainage class: Well drained
Permeabilty: Moderate

Harvey

Typical profile:
0 to 10 inches—brown loam
10 to 22 inches—pink loam
22 to 38 inches—light reddish brown loam
38 to 60 inches—yellowish red light sandy clay loam
Depth class: Deep (60 inches or more)
Parent material: Alluvial and eolian materials from sandstone, shale, and limestone
Drainage class: Well drained
Permeabilty: Moderate

Palma

Typical profile:
0 to 5 inches—brown loamy fine sand
5 to 21 inches—brown and strong brown fine sandy loam
21 to 34 inches—light brown sandy loam
34 to 60 inches—pinkish white and pink fine sandy loam and sandy loam
Depth class: Deep (60 inches or more)
Parent material: Eolian and alluvial materials derived from sandstone, shale, and limestone
Drainage class: Well drained
Permeabilty: Moderately rapid

Use and Management

Major Uses: Livestock grazing and wildlife habitat
Major Limitations for Uses: Hazard of soil blowing

Wildlife Habitat

Types of wildlife habitat supported by this map unit: Shortgrass prairie
Characteristic wildlife: Pronghorn antelope, coyote, and blacktailed jackrabbit; wildlife populations and species diversity are low

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown

on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Gallen very gravelly sandy loam, 5 to 30 percent slopes, is a phase of the Gallen series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Tucumcari-Montoya complex, 0 to 3 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Chispa-Redona association, 1 to 5 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Dam is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

10—Regnier-Rock outcrop-Lacoca complex, 30 to 80 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Regnier and similar soils: 35 percent
Rock outcrop: 30 percent
Lacoca and similar soils: 20 percent
Minor components: 15 percent

Component Descriptions

Regnier

Landscape: Breaks
Landform: Scarp slopes
Position on landform: Backslopes
Parent material: Colluvium and slope alluvium derived from red bed sandstone and shale
Slope range: 30 to 80 percent
Content of surface fragments: About 2 percent
Depth to restrictive feature: 12 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 1.8 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 3 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Breaks (North Exposure)
Potential native vegetation: Black grama, sideoats grama, New Mexico feathergrass, blue grama, little bluestem, and oneseed juniper
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 3 inches; loam
C—3 to 12 inches; clay loam
Cr—12 to 22 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Rock outcrop

Parent material: Sandstone and shale
Slope range: 30 to 80 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Lacoca

Landscape: Breaks
Landform: Structural benches
Position on landform: Shoulders
Parent material: Colluvium, residuum, and slope alluvium derived from red bed sandstone and shale
Slope range: 30 to 50 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.1 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 18 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Breaks (North Exposure)
Potential native vegetation: Blue grama, little bluestem, sideoats grama, New Mexico feathergrass, black grama, and sand bluestem
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 8 inches; loam
R—8 to 18 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Redona and similar soils
Composition: About 3 percent
Slope range: 1 to 5 percent
Ecological site: Sandy Loam

Berwolf and similar soils
Composition: About 2 percent
Slope range: 1 to 5 percent
Ecological site: Sandy Loam

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- This map unit has a significant woody plant component in the potential plant community. This plant component includes oneseed juniper, pinyon, skunkbush sumac, oak, and sacahuista.
- The slope limits access by livestock and promotes overgrazing in the less sloping areas.
- Mechanical treatment practices are not practical because of the Rock outcrop and the slope.
- Fences, livestock water pipelines, and drinking troughs are difficult to install because of the slope, the Rock outcrop, and the shallow depth to bedrock.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

11—Tucumcari-Hassell clay loams, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Tucumcari and similar soils: 50 percent
Hassell and similar soils: 40 percent
Minor components: 10 percent

Component Descriptions

Tucumcari

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Toeslopes

Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 2 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Clayey
Potential native vegetation: Blue grama, alkali sacaton, tobosa, sideoats grama, and fourwing saltbush
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; clay loam
Bt—5 to 19 inches; clay loam
Btk—19 to 49 inches; clay loam
Bss—49 to 60 inches; clay
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Hassell

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Footslopes
Parent material: Slope alluvium and residuum derived from red bed sandstone and shale
Slope range: 0 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 5.8 inches (low)
Shrink-swell potential: About 7.5 percent (high)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Clayey
Potential native vegetation: Blue grama, alkali sacaton, tobosa, sideoats grama, and fourwing saltbush
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 4 inches; clay loam
Bt—4 to 22 inches; silty clay
Btk and By—22 to 32 inches; clay
Cr—32 to 42 inches; bedrock

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Montoya and similar soils
Composition: About 5 percent
Slope range: 1 to 3 percent
Ecological site: Clayey

Lacoca and similar soils
Composition: About 5 percent
Slope range: 5 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Sandstone Savannah

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs, which facilitate range management, are suited to this map unit. Grazing management that sustains or increases the vigor, production, and reproduction of the more palatable and productive grasses and shrubs should be implemented.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

13—Tucumcari-Redona association, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Tucumcari and similar soils: 50 percent
Redona and similar soils: 40 percent
Minor components: 10 percent

Component Descriptions

Tucumcari

Landscape: Plains
Landform: Swales
Position on landform: Toeslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.7 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 2 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Clayey
Potential native vegetation: Blue grama, alkali sacaton, tobosa, sideoats grama, and fourwing saltbush
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; loam
Bt—5 to 19 inches; clay loam
Btk—19 to 49 inches; clay loam
Bss—49 to 60 inches; clay
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Redona

Landscape: Plains
Landform: Pediments
Position on landform: Footslopes
Parent material: Eolian and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 10.2 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 23 inches; sandy clay loam
Bk—23 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Montoya and similar soils
Composition: About 7 percent
Slope range: 0 to 2 percent
Flooding hazard: Rare
Ecological site: Swale

Figure 5.—Area of Tucumcari-Redona association, 0 to 5 percent slopes. Mesquite can easily invade this site if the site is overgrazed. An area of Regnier-Rock outcrop-Lacoca complex, 30 to 80 percent slopes, is in the background.

Gullied land

Composition: About 3 percent

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat (fig. 5).

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

14—Kolar-Neso association, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Kolar and similar soils: 55 percent
Neso and similar soils: 25 percent
Minor components: 20 percent

Component Descriptions

Kolar

Landscape: Plains
Landform: Plateaus
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Content of surface fragments: About 2 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.3 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Black grama, blue grama, little bluestem, New Mexico feathergrass, and sideoats grama
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 5 inches; fine sandy loam
Bw—5 to 10 inches; fine sandy loam
Bkm—10 to 20 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Neso

Landscape: Plains
Landform: Convex areas on plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 5 percent
Content of surface fragments: About 8 percent
Depth to restrictive feature: 8 to 14 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.1 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 45 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Very Shallow
Potential native vegetation: Black grama, New Mexico feathergrass, hairy grama, common wolfstail, and sand dropseed

Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 4 inches; gravelly fine sandy loam
Bk—4 to 12 inches; very gravelly fine sandy loam
Bkm—12 to 22 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Pojo and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Ecological site: Sandy Plains

Redona and similar soils
Composition: About 10 percent
Slope range: 1 to 5 percent
Ecological site: Sandy Loam

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The soils are highly susceptible to damage by year-round grazing because of the very low available water capacity.
- Fences and livestock water pipelines are difficult to install because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

15—Hilken-Palo fine sandy loams, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Hilken and similar soils: 50 percent
Palo and similar soils: 35 percent
Minor components: 15 percent

Component Descriptions

Hilken

Landscape: Plains
Landform: Slightly concave areas on plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale

Slope range: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 3.7 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, vine mesquite, and western wheatgrass
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 3 inches; fine sandy loam
Bt—3 to 21 inches; sandy clay loam
Bk—21 to 27 inches; very gravelly sandy clay loam
Bkm—27 to 37 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Palo

Landscape: Plains
Landform: Slightly convex areas on plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.1 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Black grama, blue grama, little bluestem, New Mexico feathergrass, and sideoats grama
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 4 inches; fine sandy loam
Bt—4 to 11 inches; sandy clay loam
Btk—11 to 16 inches; gravelly sandy clay loam
Bkm—16 to 26 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 1 to 5 percent
Ecological site: Sandy Loam

Pojo and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Ecological site: Sandy Plains

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the Hilken soil. The construction of earthen ponds is limited because of the moderate depth to indurated caliche.
- The Palo soil is not suited to such range management practices as livestock water pipelines and earthen ponds because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

16—Redona-Berwolf fine sandy loams, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Redona and similar soils: 50 percent
Berwolf and similar soils: 40 percent
Minor components: 10 percent

Component Descriptions

Redona

Landscape: Plains
Landform: Hillslopes
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 10.6 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, dropseed, and plains bristlegrass
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; fine sandy loam
Bt—7 to 37 inches; sandy clay loam
Btk and Bk—37 to 60 inches; sandy clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Berwolf

Landscape: Plains
Landform: Hillslopes
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.9 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, plains bristlegrass, and sand dropseed
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; fine sandy loam
Bt—6 to 41 inches; fine sandy loam
Btk—41 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Kolar and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Ecological site: Shallow

Neso and similar soils

Composition: About 5 percent
Slope range: 0 to 5 percent
Depth to restrictive feature: 8 to 14 inches to petrocalcic material
Ecological site: Very Shallow

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing and livestock water pipelines and troughs, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds and other water impoundments in areas of the Berwolf soil is limited because of the seepage potential.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

17—Lacoca-Rock outcrop complex, 10 to 25 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Lacoca and similar soils: 50 percent
Rock outcrop: 30 percent
Minor components: 20 percent

Component Descriptions

Lacoca

Landscape: Hills
Landform: Structural benches
Position on landform: Shoulders
Parent material: Eolian and colluvial material and residuum derived from red bed sandstone and shale
Slope range: 10 to 25 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.4 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 5 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)

Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Sandstone
Potential native vegetation: Blue grama, little bluestem, sideoats grama, New Mexico feathergrass, black grama, and sand bluestem
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 11 inches; fine sandy loam
R—11 to 21 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Rock outcrop

Parent material: Nearly barren sandstone and shale
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

San Jon and similar soils
Composition: About 10 percent
Slope range: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Ecological site: Loamy

La Lande and similar soils
Composition: About 5 percent
Slope range: 5 to 15 percent
Ecological site: Loamy

Regnier and similar soils
Composition: About 5 percent
Slope range: 3 to 20 percent
Depth to restrictive feature: 12 to 20 inches to bedrock (paralithic)
Ecological site: Red Shale

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- This map unit has limitations affecting grazing and range management practices because of the Rock outcrop and the slope.
- Fences and livestock water pipelines are difficult to install on the Lacoca soil because of the very shallow or shallow depth to bedrock.
- The construction of earthen ponds and other water impoundments is limited because of the very shallow or shallow depth to bedrock.

Windbreaks and environmental plantings

- This map unit has special problems affecting the establishment of plantings. It is generally unsuitable for growing trees and shrubs.
- Onsite investigations may show that plantings can be made with treatment.

Urban development

- This unit is poorly suited to urban development. The main limitations are the slope, Rock outcrop, and depth to bedrock.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

19—Gallen very gravelly sandy loam, 5 to 30 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Gallen and similar soils: 80 percent
Minor components: 20 percent

Component Descriptions

Gallen

Landscape: Valleys
Landform: Dissected terraces
Position on landform: Shoulders, backslopes, and summits
Parent material: Gravelly calcareous alluvium derived from mixed sources
Slope range: 5 to 30 percent
Content of surface fragments: About 7 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 4.3 inches (low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Gravelly
Potential native vegetation: Black grama, blue grama, sideoats grama, New Mexico feathergrass, sand dropseed, and small soapweed
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 3 inches; very gravelly sandy loam
Bw—3 to 9 inches; very gravelly sandy loam
Bk—9 to 60 inches; very gravelly sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Lacoca and similar soils
Composition: About 10 percent
Slope range: 10 to 25 percent

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Regnier and similar soils
Composition: About 5 percent
Slope range: 3 to 20 percent
Depth to restrictive feature: 12 to 20 inches to bedrock (paralithic)
Ecological site: Red Shale

La Lande and similar soils
Composition: About 5 percent
Slope range: 5 to 15 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Mesquite can be controlled by hand operation or by chemicals.
- Mechanical practices are not practical because of the slope and the gravel.
- The Gallen soil is not suited to such range management practices as earthen ponds because of the seepage and the slope.
- The Gallen soil has limited suitability for range management practices such as livestock water pipelines and fences because of the gravel.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- The Gallen soil is poorly suited to urban development.
- The main limitations are the slope and the gravel.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

20—Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Walkon and similar soils: 45 percent
Newkirk and similar soils: 25 percent
San Jon and similar soils: 20 percent
Minor components: 10 percent

Component Descriptions

Walkon

Landscape: Hills
Landform: Structural benches
Position on landform: Toeslopes and footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone
Slope range: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 6.1 inches (moderate)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, plains bristlegrass, and sand dropseed
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 5 inches; fine sandy loam
Bt—5 to 35 inches; sandy clay loam
R—35 to 45 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Newkirk

Landscape: Hills
Landform: Structural benches
Position on landform: Summits
Parent material: Eolian material and slope alluvium derived from red bed sandstone
Slope range: 1 to 5 percent
Content of surface fragments: About 4 percent
Depth to restrictive feature: 8 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.6 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 1 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Sandstone Savannah
Potential native vegetation: Blue grama, sideoats grama, New Mexico feathergrass, black grama, little bluestem, and oneseed juniper
Land capability subclass (nonirrigated): 7e

Typical profile:
A—0 to 3 inches; fine sandy loam
Bt—3 to 16 inches; sandy clay loam
R—16 to 26 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

San Jon

Landscape: Hills
Landform: Structural benches
Position on landform: Toeslopes and footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 4.4 inches (low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 6 inches; fine sandy loam
Bw1—6 to 24 inches; sandy clay loam
Bw2—24 to 30 inches; gravelly loam
R—30 to 40 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Rock outcrop
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

La Lande and similar soils
Composition: About 3 percent
Slope range: 5 to 15 percent
Ecological site: Loamy

Chispa and similar soils
Composition: About 2 percent
Slope range: 3 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Walkon and Newkirk soils have a significant woody component in the potential plant community. This woody component includes juniper, sacahuista, and pinyon.
- The construction of earthen ponds and other water impoundments is limited in areas of the Walkon and San Jon soils because of the moderate depth to bedrock.
- Fences and livestock water pipelines are difficult to install on the Newkirk soil because of the shallow depth to bedrock.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

22—Chispa-Redona association, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Chispa and similar soils: 45 percent
Redona and similar soils: 35 percent
Minor components: 20 percent

Component Descriptions

Chispa

Landscape: Plains
Landform: Hills
Position on landform: Backslopes and summits
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 2 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.4 inches (high)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, plains bristlegrass, and sand dropseed
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 11 inches; fine sandy loam

Bk1—11 to 23 inches; loam
Bk2 and Bk3—23 to 60 inches; clay loam

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Redona

Landscape: Plains
Landform: Swales
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.6 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, dropseed, and plains bristlegrass
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; fine sandy loam
Bt—7 to 40 inches; sandy clay loam
Btk and Bk—40 to 60 inches; clay loam

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Hilken and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Ecological site: Loamy

Tucumcari and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Ecological site: Clayey

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs in areas of the Chispa soil should be tolerant of the high amount of carbonates, which tie up nutrients and limit their availability.
- A wide variety of trees and shrubs can be planted on the Redona soil.
- In this map unit young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

23—Minneosa very fine sandy loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Minneosa and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Minneosa

Landscape: River valleys
Landform: Stream terraces
Position on landform: Toeslopes
Parent material: Sandy stream alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 6.4 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Flooding hazard: Occasional
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Bottomland
Potential native vegetation: Alkali sacaton, giant sacaton, vine mesquite, blue grama, fourwing saltbush, sideoats grama, and tobosa
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 8 inches; very fine sandy loam
C—8 to 60 inches; stratified sand to fine sandy loam

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Lacoca and similar soils
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Rock outcrop
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Riverwash
Composition: About 5 percent
Landform: Channels
Slope range: 0 to 2 percent
Flooding hazard: Frequent

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The construction of earthen ponds and other impoundments is limited because of seepage.
- Areas of this map unit that are infested with less desirable plants can be improved by chemical or mechanical treatment or by controlled burning.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of droughty conditions.
- Seedling mortality may be moderate because of moisture stress when the seedlings are not irrigated.
- Young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is poorly suited to urban development because of brief periods of flooding and the hazard of soil blowing.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

25—Ima-La Lande fine sandy loams, 2 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)

Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Ima and similar soils: 45 percent
La Lande and similar soils: 35 percent
Minor components: 20 percent

Component Descriptions

Ima

Landscape: Bajadas
Landform: Alluvial fans
Position on landform: Backslopes and summits
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 2 to 10 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.2 inches (high)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 5 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, dropseed, and plains bristlegrass
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 4 inches; fine sandy loam
Bw—4 to 22 inches; fine sandy loam
Bk—22 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

La Lande

Landscape: Bajadas
Landform: Alluvial fans
Position on landform: Toeslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 2 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)

Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, plains bristlegrass, and sand dropseed
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; fine sandy loam
Bw—7 to 36 inches; loam
Bk—36 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

Lacoca and similar soils
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Rock outcrop
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- A wide variety of trees and shrubs can be planted on the Ima soil.
- Planted trees and shrubs in areas of the La Lande soil should be tolerant of the high amount of carbonates, which tie up nutrients and limit their availability.
- In this map unit young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development.
- Soil blowing is a hazard.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

26—Tucumcari-Montoya complex, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Tucumcari and similar soils: 45 percent
Montoya and similar soils: 40 percent
Minor components: 15 percent

Component Descriptions

Tucumcari

Landscape: Basins
Landform: Alluvial flats
Position on landform: Toeslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.2 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Clayey
Potential native vegetation: Blue grama, alkali sacaton, tobosa, sideoats grama, and fourwing saltbush
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 32 inches; clay loam
Bk—32 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Montoya

Landscape: Basins
Landform: Basin floors
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 9.6 inches (high)
Shrink-swell potential: About 7.5 percent (high)
Flooding hazard: Rare

Ponding hazard: Rare
Runoff class: Negligible
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: About 3 percent
Average salinity in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 3 (slightly sodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, blue grama, sideoats grama, alkali sacaton, and tobosa
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 9 inches; silty clay loam
Bss—9 to 47 inches; clay
2C—47 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

La Lande and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines and watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

27—San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

San Jon and similar soils: 40 percent
Lacoca and similar soils: 30 percent

Rock outcrop: 15 percent
Minor components: 15 percent

Component Descriptions

San Jon

Landscape: Hills
Landform: Structural benches
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 3.7 inches (low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 3 inches; loam
Bw—3 to 24 inches; sandy clay loam
R—24 to 34 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Lacoca

Landscape: Hills
Landform: Structural benches
Position on landform: Shoulders
Parent material: Slope alluvium and residuum derived from red bed sandstone and shale
Slope range: 1 to 10 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.0 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Sandstone

Potential native vegetation: Blue grama, little bluestem, sideoats grama, New Mexico feathergrass, black grama, and sand bluestem
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 8 inches; fine sandy loam
R—8 to 18 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Rock outcrop

Parent material: Exposed sandstone and shale
Slope range: 1 to 10 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Tucumcari and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Clayey

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the San Jon soil.
- Construction of earthen ponds and pit tanks is limited because of the moderate depth to bedrock.
- Livestock water pipelines and fences are difficult to install on the Lacoca soil because of the very shallow or shallow depth to bedrock.

Windbreaks and environmental plantings

- Planted trees and shrubs in areas of the San Jon soil should be tolerant of droughty conditions.
- When the soils are saturated and winds are strong, trees are subject to windthrow or tip-over.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

28—Lacoca-San Jon-Rock outcrop complex, 5 to 20 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)

Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Lacoca and similar soils: 35 percent
San Jon and similar soils: 30 percent
Rock outcrop: 15 percent
Minor components: 20 percent

Component Descriptions

Lacoca

Landscape: Hills
Landform: Structural benches
Position on landform: Shoulders
Parent material: Slope alluvium and residuum derived from red bed sandstone and shale
Slope range: 5 to 20 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.3 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Sandstone Savannah
Potential native vegetation: Blue grama, sideoats grama, New Mexico feathergrass, black grama, little bluestem, and oneseed juniper
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 12 inches; cobbly fine sandy loam
R—12 to 22 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

San Jon

Landscape: Hills
Landform: Structural benches
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 5 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 4.7 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High

Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 6 inches; loam
Bw—6 to 33 inches; clay loam
R—33 to 44 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Rock outcrop

Parent material: Barren sandstone and shale
Slope range: 5 to 20 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Tucumcari and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Clayey

Redona and similar soils
Composition: About 5 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the San Jon soil.
- The construction of earthen ponds and pit tanks is limited because of the very shallow to moderate depth to bedrock.
- Livestock water pipelines and fences are difficult to install on the Lacoca soil because of the shallow depth to bedrock.

Windbreaks and environmental plantings

- Planted trees and shrubs in areas of the San Jon soil should be tolerant of droughty conditions.
- When the soils are saturated and winds are strong, trees are subject to windthrow or tip-over.

- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

29—Pojo-Neso-Berwolf association, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Pojo and similar soils: 45 percent
Neso and similar soils: 35 percent
Berwolf and similar soils: 15 percent
Minor components: 5 percent

Component Descriptions

Pojo

Landscape: Plains
Landform: Concave areas on plateaus
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 2.7 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Plains
Potential native vegetation: New Mexico feathergrass, little bluestem, plains bristlegrass, sand bluestem, sand dropseed, blue grama, sand sagebrush, skunkbush sumac, and yellow indiangrass
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 6 inches; loamy fine sand
Bt—6 to 21 inches; fine sandy loam
Bkm—21 to 31 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Neso

Landscape: Plains
Landform: Convex areas on plateaus
Position on landform: Summits
Parent material: Eolian material and slope alluvium derived from sandstone and shale
Slope range: 1 to 3 percent
Content of surface fragments: About 8 percent
Depth to restrictive feature: 8 to 14 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 0.7 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 40 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Very Shallow
Potential native vegetation: Black grama, New Mexico feathergrass, hairy grama, common wolfstail, and sand dropseed
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 2 inches; very gravelly loamy fine sand
Bk—2 to 10 inches; very cobbly fine sandy loam
Bkm—10 to 20 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Berwolf

Landscape: Plains
Landform: Plateaus
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.5 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Sandy Plains
Potential native vegetation: New Mexico feathergrass, little bluestem, sand bluestem, and dropseed
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 8 inches; loamy fine sand

Bt—8 to 49 inches; fine sandy loam
Bk—49 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Palo and similar soils
Composition: About 3 percent
Slope range: 0 to 2 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Ecological site: Shallow

Kolar and similar soils
Composition: About 2 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Ecological site: Shallow

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Pojo and Berwolf soils have a significant woody plant component in the potential plant community. This plant component includes winterfat, yucca, catclaw acacia, skunkbush sumac, and oneseed juniper.
- The Pojo soil is suited to such range management practices as fences and livestock water pipelines and troughs. This soil is not suited to such range management practices as earthen ponds and dams because of the moderate depth to indurated caliche.
- The Neso soil is not suited to such range management practices as earthen ponds because of the very shallow or shallow depth to indurated caliche.
- Livestock water pipelines are difficult to install on the Neso soil because of the shallow depth to indurated caliche.
- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the Berwolf soil.
- The construction of earthen ponds is limited because of the seepage potential.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

30—La Lande-Chispa complex, 3 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 62 degrees F (14.4 to 16.5 degrees C)
Frost-free period: 180 to 200 days

Composition

La Lande and similar soils: 50 percent
Chispa and similar soils: 35 percent
Minor components: 15 percent

Component Descriptions

La Lande

Landscape: Plains
Landform: Hills
Position on landform: Footslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 5 to 15 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.6 inches (high)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 4 inches; loam
Bw—4 to 17 inches; loam
Bk—17 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Chispa

Landscape: Plains
Landform: Hills
Position on landform: Backslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 3 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 8.7 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Limy
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, plains bristlegrass, and sand dropseed
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 8 inches; fine sandy loam

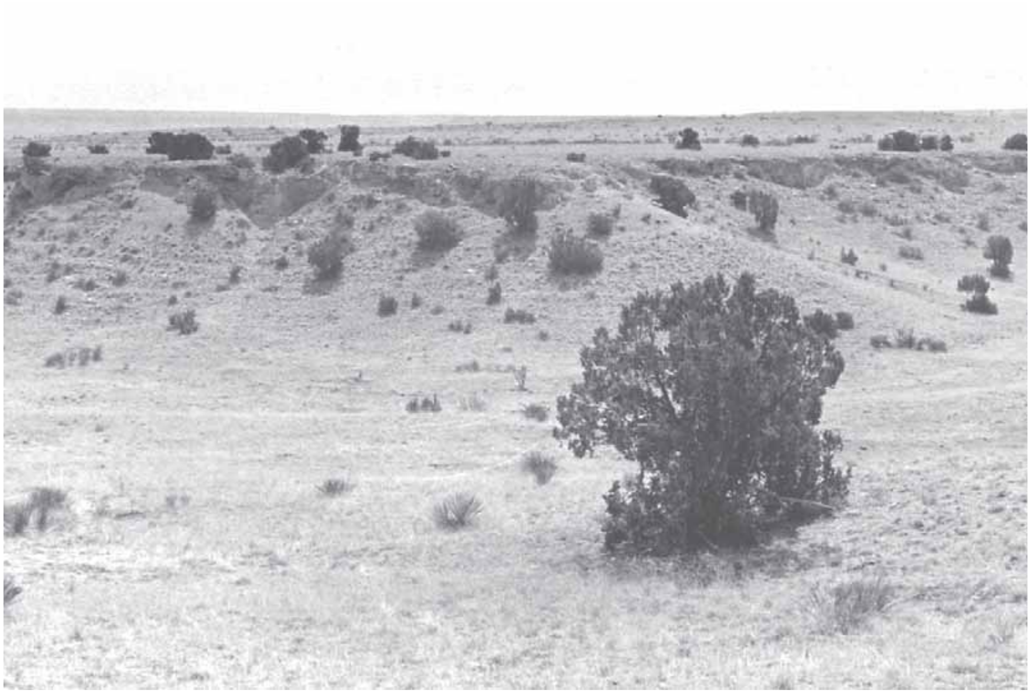

Figure 6.—An area of La Lande-Chispa complex, 3 to 15 percent slopes, used as rangeland.

Bk1—8 to 22 inches; loam
Bk2 and Bk3—22 to 60 inches; loam

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Kolar and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Ecological site: Shallow

Gallen and similar soils
Composition: About 5 percent
Slope range: 5 to 30 percent
Ecological site: Gravelly

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development (fig. 6)

Typical uses

- Fencing, livestock water pipelines, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- In this map unit young seedlings can suffer from sand blasting and can become

covered if not protected. The problems from sand blasting can be controlled by maintaining strips of vegetation.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is moderately well suited to urban development because of the slope and the potential corrosiveness of the soil.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

32—Regnier-Lacoca-Rock outcrop complex, 3 to 25 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Regnier and similar soils: 40 percent
Lacoca and similar soils: 30 percent
Rock outcrop: 15 percent
Minor components: 15 percent

Component Descriptions

Regnier

Landscape: Hills
Landform: Pediments
Position on landform: Backslopes and shoulders
Parent material: Slope alluvium, residuum, and colluvium derived from red bed sandstone and shale
Slope range: 3 to 20 percent
Content of surface fragments: About 2 percent
Depth to restrictive feature: 12 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 1.9 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Red Shale
Potential native vegetation: Alkali sacaton, blue grama, tobosa, buffalograss, and fourwing saltbush

Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 8 inches; loam
C—8 to 12 inches; clay loam
Cr—12 to 22 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Lacoca

Landscape: Hills
Landform: Structural benches
Position on landform: Shoulders
Parent material: Slope alluvium and residuum derived from red bed sandstone and shale
Slope range: 10 to 25 percent
Content of surface fragments: About 8 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 0.7 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Sandstone
Potential native vegetation: Blue grama, little bluestem, sideoats grama, New Mexico feathergrass, black grama, and sand bluestem
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 5 inches; sandy loam
R—5 to 15 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Rock outcrop

Parent material: Barren or nearly barren sandstone and shale
Slope range: 3 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Tucumcari and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Clayey

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Fencing, livestock water pipelines, and earthen ponds are not suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- In this map unit young seedlings can suffer from sand blasting and can become covered if not protected. The problems from sand blasting can be controlled by maintaining strips of vegetation.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is moderately well suited to urban development because of the slope and potential corrosiveness of the soil.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

33—Redona-Hilken loams, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Redona and similar soils: 55 percent
Hilken and similar soils: 30 percent
Minor components: 15 percent

Component Descriptions

Redona

Landscape: Plains
Landform: Concave areas on plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 10.5 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Negligible
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent

Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; loam
Bt—5 to 33 inches; clay loam
Btk and Bk—33 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section

Hilken

Landscape: Plains
Landform: Convex areas on plateaus
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 4.4 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, vine mesquite, and western wheatgrass
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 22 inches; clay loam
Bk—22 to 34 inches; gravelly sandy clay loam
Bkm—34 to 45 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Chispa and similar soils
Composition: About 10 percent
Slope range: 3 to 5 percent
Ecological site: Limy

Conger and similar soils
Composition: About 5 percent
Slope range: 1 to 3 percent

Depth to restrictive feature: 8 to 20 inches to petrocalcic material
Ecological site: Shallow

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Redona soil.
- The construction of earthen ponds and other water impoundments is limited in areas of the Hilken soil because of the moderate depth to indurated caliche.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

34—Palo-Neso complex, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Palo and similar soils: 70 percent
Neso and similar soils: 20 percent
Minor components: 10 percent

Component Descriptions

Palo

Landscape: Plains
Landform: Plateaus
Position on landform: Footslopes and backslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.0 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 5 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Black grama, blue grama, little bluestem, New Mexico feathergrass, and sideoats grama
Land capability subclass (nonirrigated): 7s

Typical profile:
A—0 to 4 inches; fine sandy loam
Bt—4 to 14 inches; clay loam
Bkm—14 to 24 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Neso

Landscape: Plains
Landform: Plateaus
Position on landform: Summits
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Content of surface fragments: About 8 percent
Depth to restrictive feature: 8 to 14 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.2 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 40 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Very Shallow
Potential native vegetation: Black grama, New Mexico feathergrass, hairy grama, common wolfstail, and sand dropseed
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 6 inches; gravelly fine sandy loam
Bk—6 to 13 inches; very gravelly fine sandy loam
Bkm—13 to 23 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Chispa and similar soils
Composition: About 5 percent
Slope range: 3 to 5 percent
Ecological site: Limy

Hilken and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Livestock water pipelines and fences are difficult to install because of the very shallow or shallow depth to indurated caliche.

Urban development

- This map unit is poorly suited to urban development because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

35—Hassell-Regnier clay loams, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Hassell and similar soils: 50 percent
Regnier and similar soils: 35 percent
Minor components: 15 percent

Component Descriptions

Hassell

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Footslopes
Parent material: Slope alluvium and residuum derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 6.9 inches (moderate)
Shrink-swell potential: About 7.5 percent (high)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Clayey
Potential native vegetation: Blue grama, alkali sacaton, tobosa, sideoats grama, and fourwing saltbush
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 12 inches; clay loam
Bt—12 to 22 inches; clay
Btk and By—22 to 37 inches; clay
Cr—37 to 47 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Regnier

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Backslopes and shoulders
Parent material: Slope alluvium and residuum derived from shale
Slope range: 0 to 3 percent
Content of surface fragments: About 4 percent
Depth to restrictive feature: 12 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 3.2 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Red Shale
Potential native vegetation: Alkali sacaton, blue grama, tobosa, buffalograss, and fourwing saltbush
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 12 inches; clay loam
C—12 to 18 inches; clay loam
Cr—18 to 28 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Tucumcari and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Clayey

Redona and similar soils
Composition: About 5 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- The construction of earthen ponds and other water impoundments is limited because of the moderate and shallow depths to bedrock.
- This map unit is suited to such range management practices as livestock water pipelines and fences.

Windbreaks and environmental plantings

- Planted trees and shrubs in areas of the Hassell soil should be tolerant of droughty conditions.

- When the soil is saturated and winds are strong, trees are subject to windthrow or tip-over.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.
- The Regnier soil has special problems affecting the establishment of windbreaks and environmental plantings. It is generally unsuitable for growing trees and shrubs. Onsite investigations may show that trees and shrub plantings can be made with treatment.

Urban development

- This map unit is poorly suited to urban development because of the depth to bedrock and the hazard of soil blowing.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

36—Alama silt loam, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Alama and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Alma

Landscape: Plains
Landform: Alluvial flats
Position on landform: Toeslopes and footslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.5 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 8 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, galleta, sideoats grama, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 3 inches; silt loam

Bw—3 to 28 inches; silty clay loam
Bk—28 to 60 inches; silt loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Tucumcari and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Clayey

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

37—Hollomex-Reeves complex, 1 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Hollomex and similar soils: 50 percent
Reeves and similar soils: 25 percent
Minor components: 25 percent

Component Descriptions

Hollomex

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Summits and backslopes
Parent material: Slope alluvium and residuum derived from gypsum material
Slope range: 3 to 10 percent
Content of surface fragments: About 5 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 2.0 in/hr (moderately slow or moderate)
Available water capacity: About 0.3 inch (very low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: About 50 percent
Average salinity in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Gyp Uplands
Potential native vegetation: Black grama, gyp dropseed, gypsum grama, alkali sacaton, tobosa, and coldenia
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 2 inches; loam
Cky—2 to 60 inches; gypsiferous silt loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Reeves

Landscape: Piedmont slopes
Landform: Pediments
Position on landform: Toeslopes
Parent material: Slope alluvium and residuum derived from gypsum material
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 2.0 in/hr (moderately slow or moderate)
Available water capacity: About 8.5 inches (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: About 60 percent
Average salinity in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 3 inches; fine sandy loam
Bw—3 to 24 inches; loam
Bky—24 to 32 inches; loam
By—32 to 60 inches; gypsiferous very fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

San Jon and similar soils
Composition: About 10 percent
Slope range: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Ecological site: Loamy

Rock outcrop
Composition: About 5 percent

Slope range: 1 to 10 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Adequate residue and litter must be maintained on the Hollomex soil to reduce the hazard of soil blowing and prevent damage to young plants.
- Deterioration of the vegetation on the Hollomex soil often results in the formation of gullies that collect overland water flow and reduce the production of vegetation.
- The Hollomex soil is suited to such range management practices as fences and livestock water pipelines. The Hollomex soil has limited suitability for such range management practices as steel rim storage areas with concrete bases because of corrosivity to metals and concrete.
- The Hollomex soil is not suited to such range management practices as earthen ponds and water retention structures because of the seepage and piping.
- The Reeves soil is suited to such range management practices as fences, livestock water pipelines, and steel rim storage areas.
- The Reeves soil is not suited to such range management practices as earthen ponds and water retention structures because of the seepage.

Windbreaks and environmental plantings

- The selection of trees and shrubs for windbreaks is limited. The high soil pH affects the selection and growth of plants.
- Soil blowing is a hazard. It can be controlled by maintaining strips of native vegetation between plants.
- Young seedlings can suffer from sandblasting during high winds and can become covered with drifting sand if not protected.

Urban development

- This unit map is somewhat poorly suited to urban development because of the excess gypsum and the hazards of water erosion and soil blowing.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

50—Conger-Hilken loams, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Conger and similar soils: 50 percent
Hilken and similar soils: 35 percent
Minor components: 15 percent

Component Descriptions

Conger

Landscape: Plains
Landform: Plateaus
Position on landform: Summits and shoulders
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 1 to 3 percent
Depth to restrictive feature: 8 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.2 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 13 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Blue grama, black grama, sideoats grama, New Mexico feathergrass, hairy grama, and yucca
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 13 inches; loam
Bkm—13 to 23 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Hilken

Landscape: Plains
Landform: Plateaus
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 4.9 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, vine mesquite, and western wheatgrass
Land capability subclass (nonirrigated): 6e

Typical profile:
A—0 to 6 inches; loam
Bt—6 to 31 inches; loam
Bkm—31 to 41 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

Chispa and similar soils
Composition: About 5 percent
Slope range: 2 to 5 percent
Ecological site: Sandy Loam

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the Conger and Hilken soils.
- The construction of earthen ponds is limited because of the very shallow or shallow and moderate depths to indurated caliche.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

55—Conger-Redona association, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Conger and similar soils: 55 percent
Redona and similar soils: 40 percent
Minor components: 5 percent

Component Descriptions

Conger

Landscape: Plains
Landform: Plateaus
Position on landform: Shoulders
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 2 to 5 percent
Depth to restrictive feature: 8 to 20 inches to petrocalcic material

Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 3.1 inches (low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very high
Average content of calcium carbonate in horizon of maximum accumulation: About 13 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Blue grama, black grama, sideoats grama, New Mexico feathergrass, hairy grama, and yucca
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 18 inches; loam
Bkm—18 to 28 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Redona

Landscape: Plains
Landform: Plateaus
Position on landform: Toeslopes and footslopes
Parent material: Eolian material and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 10.5 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; loam
Bt—5 to 23 inches; clay loam
Btk and Bk—23 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Hilken and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to petrocalcic material
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the Conger soil.
- The construction of earthen ponds and pit tanks is limited because of the very shallow or shallow depth to indurated caliche.
- Fencing, livestock water pipelines, watering facilities, and earthen ponds are suited to the Redona soil.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

56—Karde loam, 3 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,200 to 5,300 feet (1,280 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Karde and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Karde

Landscape: Plains
Landform: Playa dunes
Position on landform: Shoulders and backslopes
Parent material: Eolian material derived from old playa sediments
Slope range: 3 to 10 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.5 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 35 percent
Average content of gypsum in horizon of maximum accumulation: About 7 percent
Average salinity in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 3 (slightly sodic)
Ecological site: Limy
Potential native vegetation: Blue grama, sideoats grama, black grama, hairy grama, sand dropseed, and fourwing saltbush
Land capability subclass (nonirrigated): 6c

Typical profile:
A—0 to 9 inches; loam
AC—9 to 19 inches; clay loam
C1—19 to 33 inches; silty clay loam
C2—33 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Redona and similar soils
Composition: About 10 percent
Slope range: 1 to 5 percent
Ecological site: Sandy Loam

Montoya and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Flooding hazard: Rare
Ecological site: Swale

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

57—Tuloso-Flugle association, 1 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,600 to 6,200 feet (1,707 to 1,890 meters)
Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Tuloso and similar soils: 45 percent
Flugle and similar soils: 35 percent
Minor components: 20 percent

Component Descriptions

Tuloso

Landscape: Hills
Landform: Broad knolls
Position on landform: Shoulders
Parent material: Eolian material, slope alluvium, and residuum derived from sandstone
Slope range: 1 to 15 percent
Content of surface fragments: About 15 percent
Depth to restrictive feature: 6 to 20 inches to bedrock (lithic)

Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 0.8 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: None
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: None assigned
Potential native vegetation: Common trees—oneseed juniper and twoneedle pinyon; other plants—blue grama, hairy grama, little bluestem, sideoats grama, common wolfstail, galleta, and oak
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 2 inches; very cobbly fine sandy loam
Bw—2 to 11 inches; very cobbly fine sandy loam
R—11 to 21 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Flugle

Landscape: Hills
Landform: Hillslopes
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from sandstone and shale
Slope range: 1 to 7 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 8.3 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 3 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Deep Sand Savannah
Potential native vegetation: Big bluestem, cane bluestem, juniper, little bluestem, sand bluestem, twoneedle pinyon, black grama, galleta, sand dropseed, sand sagebrush, and sideoats grama
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; fine sandy loam
Bt—6 to 31 inches; sandy clay loam
Bk—31 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Rock outcrop
Composition: About 10 percent
Slope range: 1 to 10 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Other minor components and similar soils
Composition: About 10 percent
Slope range: 1 to 10 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The main concerns in producing and harvesting pinyon and juniper on the Tuloso soil are cobbles on the soil surface, windthrow, seedling mortality, wind erosion, and water erosion.
- The use of equipment is limited by the large number of angular cobbles on the surface.
- Trees are subject to windthrow during periods when the soils are excessively wet and winds are strong.
- The Tuloso soil should be managed so that it is protected from excessive soil erosion. Proper road placement, construction of water bars, and seeding cuts and fills help to control erosion.
- High summer temperatures and the low available water capacity reduce the survival rate of naturally established seedlings.
- Providing shade increases seedling survival rates.
- Where slopes exceed 8 percent, cross-country travel becomes difficult for two-wheel-drive vehicles. Access routes should be selected where grades are less than 8 percent.
- The Tuloso soil is not suited to practices such as livestock water pipelines and earthen ponds because of the cobbles and the shallow depth to bedrock.
- Fencing, livestock water pipelines, and watering facilities, which facilitate range management, are suited to the Flugle soil. The construction of earthen ponds is limited because of the seepage.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

58—Deama cobbly loam, 3 to 25 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,600 to 6,200 feet (1,707 to 1,890 meters)
Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Deama and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Deama

Landscape: Hills
Landform: Knolls and ridges
Position on landform: Shoulders

Parent material: Eolian material, slope alluvium, and residuum derived from limestone
Slope range: 3 to 25 percent
Content of surface fragments: About 12 percent
Depth to restrictive feature: 6 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.6 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 50 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: None assigned
Potential native vegetation: Common trees—oneseed juniper and twoneedle pinyon; other plants—blue grama, black grama, little bluestem, sideoats grama, New Mexico feathergrass, and oak
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 7 inches; cobbly loam
Bk1—7 to 14 inches; very cobbly loam
Bk2—14 to 17 inches; very gravelly very fine sandy loam
R—17 to 27 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Manzano and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Ecological site: Swale

Harvey and similar soils
Composition: About 5 percent
Slope range: 3 to 15 percent
Ecological site: Limy

Rock outcrop
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The main concerns in producing and harvesting pinyon and juniper are soil erosion and windthrow.
- This map unit should be managed so that it is protected from excessive soil erosion. Proper road placement, construction of water bars, and seeding of cuts and fills help to control erosion.
- High summer temperatures and the low available water capacity reduce the survival rates of naturally occurring seedlings.
- Providing shade increases seedling survival rates.

- Trees are subject to windthrow during periods when the soil is excessively wet and the winds are strong.
- The use of equipment is limited by the cobbles on the surface and throughout the soil.
- Where slopes exceed 8 percent, cross-country travel becomes difficult for two-wheel-drive vehicles. Access routes should be selected where grades are less than 8 percent.
- Cross-slope movement should generally be on the contour.
- The Deama soil is not suited to range practices, such as livestock water pipelines and earthen ponds, because of the very shallow or shallow depth of bedrock.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

70—Manzano loam, 0 to 2 percent slopes, rarely flooded

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Manzano and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Manzano

Landscape: Plains
Landform: Broad drainageways
Position on landform: Toeslopes
Parent material: Slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 10.0 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Flooding hazard: Rare
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, western wheatgrass, alkali sacaton, galleta, blue grama, fourwing saltbush, mat muhly, and squirreltail
Land capability subclass (nonirrigated): 4c
Typical profile:
A—0 to 11 inches; loam
Bw—11 to 21 inches; loam

Bk—21 to 41 inches; sandy clay loam
Akb—41 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Silver and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Clovis and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

La Fonda and similar soils
Composition: About 5 percent
Slope range: 5 to 15 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

71—Clovis fine sandy loam, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Clovis and similar soils: 80 percent
Minor components: 20 percent

Component Descriptions

Clovis

Landscape: Plains
Landform: Alluvial flats
Position on landform: Toeslopes
Parent material: Eolian and slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 9.9 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Sandy
Potential native vegetation: Blue grama, black grama, sideoats grama, needleandthread, galleta, and sand sagebrush
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 8 inches; fine sandy loam
Bt—8 to 29 inches; sandy clay loam
Btk and Bk—29 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Pastura and similar soils
Composition: About 10 percent
Slope range: 0 to 8 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Ecological site: Shallow

Harvey and similar soils
Composition: About 5 percent
Slope range: 3 to 15 percent
Ecological site: Limy

Hagerman and similar soils
Composition: About 5 percent
Slope range: 1 to 10 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- A wide variety of trees and shrubs can be planted on the Clovis soil.
- In areas of the Clovis soil, young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development.
- Soil blowing is a hazard.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

72—Harvey-Darvey complex, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Harvey and similar soils: 45 percent
Darvey and similar soils: 35 percent
Minor components: 20 percent

Component Descriptions

Harvey

Landscape: Plains
Landform: Undulating plateaus
Position on landform: Summits and shoulders
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 2 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.5 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 35 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Limy
Potential native vegetation: Common trees—oneseed juniper and twoneedle pinyon; other plants—black grama, sideoats grama, blue grama, needlegrass, winterfat, Bigelow sagebrush, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 4 inches; very fine sandy loam
Bk1—4 to 19 inches; loam
Bk2 and Bk3—19 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Darvey

Landscape: Plains
Landform: Undulating plateaus
Position on landform: Footslopes and toeslopes

Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 11.1 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 33 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; loam
Bw—6 to 25 inches; loam
Bk—25 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Pastura and similar soils
Composition: About 10 percent
Slope range: 0 to 8 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Ecological site: Shallow

Palma and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Sandy

Hagerman and similar soils
Composition: About 5 percent
Slope range: 1 to 10 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of carbonates, which tie up nutrients and limit their availability.
- Young seedlings can suffer from sand blasting and can become covered if not

protected. This problem can be controlled by maintaining strips of vegetation between plants.
- In this map unit weed control by cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development.
- Corrosivity and soil blowing are hazards.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

73—Winona-Gabaldon complex, 0 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Winona and similar soils: 65 percent
Gabaldon and similar soils: 15 percent
Minor components: 20 percent

Component Descriptions

Winona

Landscape: Sinkhole karsts
Landform: Ridges and hillslopes
Position on landform: Shoulders and backslopes
Parent material: Eolian material, slope alluvium, and residuum derived from limestone
Slope range: 1 to 15 percent
Content of surface fragments: About 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 0.9 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 50 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Limestone
Potential native vegetation: Metcalfe muhly, New Mexico feathergrass, curlyleaf muhly, black grama, sideoats grama, Bigelow sagebrush, other halfshrubs, and sacahuista
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 4 inches; very channery fine sandy loam

Bk—4 to 12 inches; very cobbly loam
R—12 to 22 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Gabaldon

Landscape: Sinkhole karsts
Landform: Collapse sinkholes
Parent material: Alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.2 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Flooding hazard: Rare
Ponding hazard: Rare
Runoff class: Negligible
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, western wheatgrass, alkali sacaton, tobosa, blue grama, and fourwing saltbush
Land capability subclass (nonirrigated): 4c
Typical profile:
A—0 to 4 inches; silt loam
Bw—4 to 25 inches; silt loam
Bk—25 to 60 inches; silty clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Darvey and similar soils
Composition: About 10 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Harvey and similar soils
Composition: About 10 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Winona soil is suited to such range management practices as cross fences. This soil is not suited to such range management practices as livestock water pipelines, earthen ponds, and water retention structures because of the shallow depth to bedrock.
- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Gabaldon soil.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

75—Pastura-Silver-Gabaldon complex, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Pastura and similar soils: 45 percent
Silver and similar soils: 30 percent
Gabaldon and similar soils: 15 percent
Minor components: 10 percent

Component Descriptions

Pastura

Landscape: Plains
Landform: Broad plateaus
Position on landform: Summits and shoulders
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 5 percent
Content of surface fragments: About 3 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.6 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Sideoats grama, black grama, blue grama, common wolfstail, little bluestem, needlegrass, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 3 inches; loam
Bw—3 to 10 inches; loam
Bkm—10 to 20 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Silver

Landscape: Plains

Landform: Drainageways
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 10.6 inches (high)
Shrink-swell potential: About 7.5 percent (high)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, threeawn, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; loam
Bt—6 to 48 inches; clay
Bk—48 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Gabaldon

Landscape: Plains
Landform: Swales
Parent material: Slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.3 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Flooding hazard: Rare
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, western wheatgrass, alkali sacaton, tobosa, blue grama, and fourwing saltbush
Land capability subclass (nonirrigated): 4c
Typical profile:
A—0 to 11 inches; silt loam
Bw—11 to 25 inches; silt loam
Bk—25 to 60 inches; silty clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Rock outcrop
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: Bedrock (lithic) at the surface

Harvey and similar soils
Composition: About 5 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Pastura soil is suited to such range management practices as cross fences and water troughs. This soil is not suited to such range management practices as livestock water pipelines and earthen ponds because of the very shallow or shallow depth to indurated caliche.
- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Silver and Gabaldon soils.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

76—Pastura-Clovis association, 0 to 8 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Pastura and similar soils: 60 percent
Clovis and similar soils: 20 percent
Minor components: 20 percent

Component Descriptions

Pastura

Landscape: Plains
Landform: Plateaus
Position on landform: Shoulders and summits
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 8 percent
Content of surface fragments: About 3 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.1 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Black grama, blue grama, little bluestem, needlegrass, sideoats grama, sand dropseed, and threeawn
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 5 inches; fine sandy loam
Bw—5 to 15 inches; loam
Bkm—15 to 26 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Clovis

Landscape: Plains
Landform: Plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.9 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; fine sandy loam
Bt—5 to 21 inches; clay loam
Btk and Bk—21 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Gabaldon and similar soils
Composition: About 10 percent
Landscape: Plains
Landform: Swales
Slope range: 0 to 1 percent
Flooding hazard: Rare
Ecological site: Swale

Harvey and similar soils
Composition: About 10 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Pastura soil is suited to such range practices as cross fences and water troughs. This soil is not suited to such range management practices as livestock pipelines and earthen ponds because of the very shallow or shallow depth to indurated caliche.
- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Clovis soil.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

77—Cardenas-Palma loamy fine sands, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Cardenas and similar soils: 65 percent
Palma and similar soils: 25 percent
Minor components: 10 percent

Component Descriptions

Cardenas

Landscape: Plains
Landform: Broad plateaus
Position on landform: Shoulders and summits
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Content of surface fragments: About 8 percent
Depth to restrictive feature: 10 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.7 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent

Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Plains
Potential native vegetation: Sideoats grama, little bluestem, black grama, blue grama, sand bluestem, New Mexico feathergrass, hairy grama, sacahuista, and skunkbush sumac
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 4 inches; loamy fine sand
Bk—4 to 14 inches; fine sandy loam
Bkm—14 to 24 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Palma

Landscape: Plains
Landform: Broad plateaus
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.8 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 18 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: Black grama, sideoats grama, blue grama, galleta, needleandthread, sand bluestem, Indian ricegrass, and sand sagebrush
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 5 inches; loamy fine sand
Bt—5 to 21 inches; fine sandy loam
Bk—21 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Clovis and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines are difficult to install on the Cardenas soil because of the shallow depth to indurated caliche.
- The Cardenas soil is not suited to range management practices such as earthen ponds and mechanical brush control because of the shallow depth to indurated caliche.
- Fencing, livestock water pipelines, and watering facilities, which facilitate range management, are suited to the Palma soil. Earthen ponds, however, tend to have seepage problems on this soil.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

79—Travessilla-Rock outcrop complex, 30 to 75 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Travessilla and similar soils: 60 percent
Rock outcrop: 20 percent
Minor components: 20 percent

Component Descriptions

Travessilla

Landscape: Breaks
Landform: Structural benches
Position on landform: Backslopes
Parent material: Eolian material, colluvium, slope alluvium, and residuum derived from sandstone and shale
Slope range: 30 to 75 percent
Content of surface fragments: About 10 percent
Depth to restrictive feature: 6 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.8 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Breaks
Potential native vegetation: Little bluestem, sideoats grama, New Mexico feathergrass, black grama, blue grama, oneseed juniper, plains lovegrass, and twoneedle pinyon

Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 6 inches; channery loam
C—6 to 13 inches; channery loam
R—13 to 23 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Rock outcrop

Landform: Escarpments
Parent material: Barren or nearly barren limestone and sandstone
Slope range: 30 to 75 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

La Fonda and similar soils
Composition: About 10 percent
Slope range: 5 to 15 percent
Ecological site: Sandy

Clovis and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Mechanical treatment practices are not practical because the surface is channery, the slopes are steep, and the soil is very shallow or shallow.
- Fences and livestock water pipelines are difficult to install because of the slope, the very shallow or shallow depth to bedrock, and the Rock outcrop.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

80—Travessilla-Hagerman-Rock outcrop complex, 1 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Travessilla and similar soils: 35 percent
Hagerman and similar soils: 30 percent
Rock outcrop: 20 percent
Minor components: 15 percent

Component Descriptions

Travessilla

Landscape: Hills
Landform: Structural benches
Position on landform: Backslopes
Parent material: Eolian material, colluvium, residuum, and slope alluvium derived from sandstone and shale
Slope range: 1 to 15 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 1.4 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Sandstone
Potential native vegetation: Little bluestem, sideoats grama, Indian ricegrass, blue grama, and Gambel oak
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 6 inches; fine sandy loam
C—6 to 12 inches; fine sandy loam
R—12 to 22 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Hagerman

Landscape: Hills
Landform: Structural benches
Position on landform: Toeslopes and footslopes
Parent material: Eolian material, colluvium, residuum, and slope alluvium derived from sandstone and shale
Slope range: 1 to 10 percent
Content of surface fragments: About 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 5.8 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 6 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama,

black grama, fourwing saltbush, plains lovegrass, sand dropseed, threeawn, and vine mesquite

Land capability subclass (nonirrigated): 6c

Typical profile:

A—0 to 7 inches; loam

Bt—7 to 36 inches; clay loam

R—36 to 46 inches; bedrock

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Rock outcrop

Landform: Ridges
Parent material: Barren or nearly barren limestone and sandstone
Slope range: 1 to 15 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

Harvey and similar soils

Composition: About 10 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Clovis and similar soils

Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Livestock water pipelines and fences are difficult to install on the Travessilla soil because of the very shallow or shallow depth to bedrock.
- Fencing, livestock water pipelines, and watering facilities, which facilitate range management, are suited to the Hagerman soil.
- Earthen ponds are difficult to install because of the depth to bedrock.

Windbreaks and environmental plantings

- The Travessilla soil has special problems affecting the establishment of windbreaks and environmental plantings. It is generally unsuitable for growing trees and shrubs. Onsite investigations may show that trees and shrub plantings can be made with treatment.
- Planted trees in areas of the Hagerman soil should be tolerant of droughty conditions.
- When the soils are saturated and winds are strong, trees are subject to windthrow and tip-over.
- Weed control through cultivation or application of herbicide helps to remove competing competition.

Urban development

- This map unit is poorly suited to urban development.
- The main limitations are the very shallow or shallow and the moderate depths to bedrock and the slope.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

81—Darvey-Silver association, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Darvey and similar soils: 60 percent
Silver and similar soils: 30 percent
Minor components: 10 percent

Component Descriptions

Darvey

Landscape: Plains
Landform: Hillslopes
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from sandstone and shale
Slope range: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 11.1 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 33 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 4 inches; loam
Bw—4 to 30 inches; loam
Bk—30 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Silver

Landscape: Plains
Landform: Drainageways
Position on landform: Toeslopes

Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 10.3 inches (high)
Shrink-swell potential: About 7.5 percent (high)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, threeawn, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; loam
Bt1—6 to 26 inches; clay loam
Bt2—26 to 35 inches; clay
Bk—35 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Harvey and similar soils
Composition: About 10 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Palma and similar soils
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

82—Clovis loam, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)

Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Clovis and similar soils: 80 percent
Minor components: 20 percent

Component Descriptions

Clovis

Landscape: Plains
Landform: Alluvial flats
Position on landform: Toeslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 7.7 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 23 inches; loam
Btk and Bk—23 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Darvey and similar soils
Composition: About 10 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Manzano and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Swale

Use and Management

Major Land Uses: Livestock grazing, wildlife habitat, and urban development

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- The Clovis soil is suited to urban development.
- Soil blowing is a hazard.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

85—Harvey-Dean loams, 3 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Harvey and similar soils: 45 percent
Dean and similar soils: 40 percent
Minor components: 15 percent

Component Descriptions

Harvey

Landscape: Plains
Landform: Undulating plateaus
Position on landform: Backslopes and footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 3 to 15 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Limy

Potential native vegetation: Common trees—oneseed juniper and twoneedle pinyon; other plants—black grama, sideoats grama, blue grama, needlegrass, winterfat, Bigelow sagebrush, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 10 inches; loam
Bk1—10 to 38 inches; loam
Bk2 and Bk3—38 to 60 inches; sandy clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Dean

Landscape: Plains
Landform: Undulating plateaus
Position on landform: Shoulders and summits
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 3 to 10 percent
Content of surface fragments: About 4 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.0 inches (high)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 45 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Limy
Potential native vegetation: Black grama, sideoats grama, blue grama, winterfat, and New Mexico feathergrass
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 8 inches; loam
Bk1 and Bk2—8 to 28 inches; gravelly sandy loam
Bk3 and Bk4—28 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Pastura and similar soils
Composition: About 10 percent
Slope range: 0 to 5 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Ecological site: Shallow

Travessilla and similar soils
Composition: About 5 percent
Slope range: 1 to 15 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Harvey soil.
- Fencing and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to the Dean soil. Construction of earthen ponds, however, is limited because of the seepage.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

86—Palma loamy fine sand, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Palma and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Palma

Landscape: Plains
Landform: Broad plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.9 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 18 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)

Figure 7.—An area of Palma loamy fine sand, 1 to 5 percent slopes, that contains a large percentage of little bluestem.

Ecological site: Sandy
Potential native vegetation: Black grama, sideoats grama, blue grama, galleta, needleandthread, sand bluestem, Indian ricegrass, and sand sagebrush (fig. 7)
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 8 inches; loamy fine sand
Bt—8 to 35 inches; fine sandy loam
Bk—35 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Clovis and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Harvey and similar soils
Composition: About 5 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to this map unit.

- This map unit is not suited to such range management practices as earthen ponds because of the seepage.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

89—Clovis-Pastura association, 0 to 3 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Clovis and similar soils: 50 percent
Pastura and similar soils: 40 percent
Minor components: 10 percent

Component Descriptions

Clovis

Landscape: Plains
Landform: Plateaus
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 8.1 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, and vine mesquite
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 31 inches; clay loam
Btk and Bk—31 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Pastura

Landscape: Plains
Landform: Plateaus

Position on landform: Shoulders and backslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 3 percent
Content of surface fragments: About 4 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.6 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 25 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Shallow
Potential native vegetation: Sideoats grama, black grama, blue grama, common wolfstail, little bluestem, needlegrass, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 8 inches; loam
Bw—8 to 15 inches; loam
Bkm—15 to 25 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Harvey and similar soils
Composition: About 5 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Silver and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat (fig. 8)

Typical uses

- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Clovis soil.
- The Pastura soil is suited to such range management practices as cross fences and water troughs.
- The Pastura soil is not suited to such range management practices as livestock water pipelines and earthen ponds because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

Figure 8.—An area of Clovis-Pastura association, 0 to 3 percent slopes. The very deep Clovis soil is in the Loamy Ecological Site. The very shallow or shallow Pastura soil is in the Shallow Ecological Site.

91—Pastura-Harvey association, 0 to 8 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Pastura and similar soils: 60 percent
Harvey and similar soils: 25 percent
Minor components: 15 percent

Component Descriptions

Pastura

Landscape: Plains
Landform: Plateaus
Position on landform: Backslopes and shoulders
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 5 percent
Content of surface fragments: About 3 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.3 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Sideoats grama, black grama, blue grama, common wolfstail, little bluestem, needlegrass, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 4 inches; loam
Bw—4 to 14 inches; loam
Bkm—14 to 24 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Harvey

Landscape: Plains
Landform: Plateaus
Position on landform: Toeslopes and footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 3 to 8 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Limy
Potential native vegetation: Common trees—oneseed juniper and twoneedle pinyon; other plants—black grama, sideoats grama, blue grama, needlegrass, winterfat, Bigelow sagebrush, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 6 inches; fine sandy loam
Bk1—6 to 26 inches; clay loam
Bk2 and Bk3—26 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Clovis and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Loamy

Palma and similar soils
Composition: About 5 percent
Slope range: 0 to 5 percent
Ecological site: Sandy

Winona and similar soils
Composition: About 5 percent
Slope range: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)
Ecological site: Limestone Hills

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Pastura soil is suited to such range management practices as cross fences and water troughs.
- Livestock water pipelines are difficult to install on the Pastura soil because of the very shallow or shallow depth to indurated caliche.
- The Pastura soil is not suited to such range management practices as earthen ponds because of the very shallow or shallow depth to indurated caliche.
- Fencing, livestock water pipelines, watering facilities, and earthen ponds, which facilitate range management, are suited to the Harvey soil.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

92—Winona-Rock outcrop complex, 15 to 30 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Winona and similar soils: 70 percent
Rock outcrop: 20 percent
Minor components: 10 percent

Component Descriptions

Winona

Landscape: Karst
Landform: Hills
Position on landform: Shoulders and backslopes
Parent material: Eolian material, slope alluvium, and residuum derived from limestone
Slope range: 15 to 30 percent
Content of surface fragments: About 15 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 1.1 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 50 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Limestone Hills
Potential native vegetation: Black grama, sideoats grama, twoneedle pinyon, Metcalfe muhly, curlyleaf muhly, needlegrass, juniper, other halfshrubs, and plains lovegrass
Land capability subclass (nonirrigated): 7e
Typical profile:
A—0 to 4 inches; very channery fine sandy loam
Bk—4 to 14 inches; very cobbly loam
R—14 to 24 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Rock outcrop

Parent material: Barren or nearly barren limestone
Slope range: 15 to 30 percent
Depth to restrictive feature: Bedrock (lithic) at the surface
Land capability subclass (nonirrigated): 8s

Minor Components

Harvey and similar soils
Composition: About 10 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- This map unit has a significant wood plant component in the potential plant community. This plant component includes shrubs and halfshrubs such as mimosa, skunkbush sumac, fourwing saltbush, juniper, and pinyon.
- The Winona soil is suited to such range management practices as fences and water troughs.
- Livestock water pipelines are difficult to install because of the shallow depth to bedrock.
- The Winona soil is not suited to such range management practices as earthen ponds because of the shallow depth to bedrock.
- Areas of the Rock outcrop have limited suitability for grazing because of the sparseness of useable forage.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

93—Pastura loam, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Pastura and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Pastura

Landscape: Plains
Landform: Broad plateaus
Position on landform: Shoulders and summits
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 5 percent
Content of surface fragments: About 4 percent
Depth to restrictive feature: 5 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.6 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 20 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow
Potential native vegetation: Sideoats grama, black grama, blue grama, common wolfstail, little bluestem, needlegrass, fourwing saltbush, and western wheatgrass
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 9 inches; loam
Bw—9 to 15 inches; loam
Bkm—15 to 25 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Clovis and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Sandy

Harvey and similar soils
Composition: About 5 percent

Slope range: 2 to 5 percent
Ecological site: Limy

Darvey and similar soils
Composition: About 5 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- This map unit is suited to such range management practices as cross fences and water troughs.
- Livestock water pipelines are difficult to install because of the very shallow or shallow depth to indurated caliche.
- This map unit is not suited to such range management practices as earthen ponds because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

94—Palma fine sandy loam, 0 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Palma and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Palma

Landscape: Plains
Landform: Hillslopes
Position on landform: Backslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 5 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 8.1 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 18 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)

Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: Blue grama, black grama, sideoats grama, galleta, and needleandthread
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 5 inches; fine sandy loam
Bt—5 to 23 inches; fine sandy loam
Bk—23 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Clovis and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Ecological site: Sandy

La Fonda and similar soils
Composition: About 5 percent
Slope range: 5 to 15 percent
Ecological site: Sandy

Darvey and similar soils
Composition: About 5 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds is limited because of the potential for seepage.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

95—Flugle loamy fine sand, 1 to 5 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Flugle and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Flugle

Landscape: Plains
Landform: Alluvial flats
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 8.1 inches (moderate)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Deep Sand Savannah
Potential native vegetation: Big bluestem, cane bluestem, juniper, little bluestem, sand bluestem, twoneedle pinyon, black grama, galleta, sand dropseed, sand sagebrush, and sideoats grama
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 6 inches; loamy fine sand
Bt1—6 to 20 inches; fine sandy loam
Bt2—20 to 42 inches; sandy clay loam
Bk—42 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Harvey and similar soils
Composition: About 10 percent
Slope range: 3 to 15 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, and watering facilities, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds is limited because of the potential for seepage in the lower part of the soil.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

Figure 9.—An area of Mido loamy fine sand, 1 to 10 percent slopes. Mido soils formed from windblown sands.

96—Mido loamy fine sand, 1 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Mido and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Mido

Landscape: Dune fields
Landform: Dunes
Position on landform: Summits and backslopes
Parent material: Eolian material and slope alluvium derived from sandstone and shale (fig. 9)
Slope range: 1 to 10 percent
Drainage class: Excessively drained
Slowest permeability: 6.0 to 20 in/hr (rapid)
Available water capacity: About 4.4 inches (low)
Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 5 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Deep Sand
Potential native vegetation: Little bluestem, Indian ricegrass, fourwing saltbush, sand bluestem, sand sagebrush, sandhill muhly, and sideoats grama
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 11 inches; loamy fine sand
C—11 to 60 inches; loamy fine sand
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Cardenas and similar soils
Composition: About 5 percent
Slope range: 0 to 3 percent
Depth to restrictive feature: 10 to 20 inches to petrocalcic material
Ecological site: Shallow Plains

Palma and similar soils
Composition: About 5 percent
Slope range: 0 to 5 percent
Ecological site: Sandy

Dune land
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds is limited because of the seepage potential.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

97—Bond-Hagerman complex, 1 to 10 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,600 to 6,200 feet (1,707 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Bond and similar soils: 50 percent
Hagerman and similar soils: 30 percent
Minor components: 20 percent

Component Descriptions

Bond

Landscape: Hills
Landform: Structural benches
Position on landform: Shoulders
Parent material: Eolian material, slope alluvium, and residuum derived from sandstone
Slope range: 1 to 10 percent
Content of surface fragments: About 5 percent
Depth to restrictive feature: 6 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.3 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 1 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Shallow Sandy Savannah
Potential native vegetation: Little bluestem, sideoats grama, black grama, twoneedle pinyon, blue grama, and galleta
Land capability subclass (nonirrigated): 7s
Typical profile:
A—0 to 3 inches; fine sandy loam
Bt—3 to 14 inches; clay loam
R—14 to 24 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Hagerman

Landscape: Piedmont slopes
Landform: Structural benches
Position on landform: Toeslopes and footslopes
Parent material: Eolian material, slope alluvium, and residuum derived from sandstone and shale
Slope range: 1 to 10 percent
Content of surface fragments: About 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 4.5 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Medium
Average content of calcium carbonate in horizon of maximum accumulation: About 6 percent
Average content of gypsum in horizon of maximum accumulation: None

Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, threeawn, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 28 inches; clay loam
R—28 to 38 inches; bedrock
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Clovis and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Ecological site: Sandy

Harvey and similar soils
Composition: About 5 percent
Slope range: 3 to 15 percent
Ecological site: Limy

Rock outcrop
Composition: About 5 percent
Slope range: 3 to 10 percent
Ecological site: Limy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- The Bond soil has a significant woody plant component in the potential plant community. This plant component includes juniper, sacahuista, and pinyon.
- Livestock water pipelines and fences are difficult to install on the Bond soil because of the very shallow or shallow depth to bedrock.
- Fencing, livestock water pipelines, and watering facilities, which facilitate range management, are suited to the Hagerman soil.
- The construction of earthen ponds is limited because of the moderate depth to bedrock.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

98—La Fonda-Palma fine sandy loams, 5 to 15 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,700 to 6,200 feet (1,433 to 1,890 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)

Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

La Fonda and similar soils: 50 percent
Palma and similar soils: 30 percent
Minor components: 20 percent

Component Descriptions

La Fonda

Landscape: Bajadas
Landform: Alluvial fans
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 5 to 15 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 12 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, threeawn, and vine mesquite
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 20 inches; fine sandy loam
Bw—20 to 38 inches; sandy clay loam
Bk—38 to 60 inches; sandy clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Palma

Landscape: Bajadas
Landform: Alluvial fans
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 5 to 10 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 8.8 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 18 percent
Average content of gypsum in horizon of maximum accumulation: None

Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: Blue grama, black grama, sideoats grama, galleta, and needleandthread
Land capability subclass (nonirrigated): 6e
Typical profile:
A—0 to 3 inches; fine sandy loam
Bt—3 to 56 inches; fine sandy loam
Bk—56 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Clovis and similar soils
Composition: About 10 percent
Slope range: 0 to 3 percent
Ecological site: Sandy

Darvey and similar soils
Composition: About 10 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fencing, livestock water pipelines, and water facilities, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds is limited because of seepage in areas of the Palma soil.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

101—Mido loamy fine sand, 0 to 1 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,100 to 5,300 feet (1,554 to 1,615 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Mido and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Mido

Landscape: River valleys

Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from sandstone and shale
Slope range: 0 to 1 percent
Drainage class: Excessively drained
Slowest permeability: 6.0 to 20 in/hr (rapid)
Available water capacity: About 4.4 inches (low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Negligible
Average content of calcium carbonate in horizon of maximum accumulation: About 4 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: 0 (nonsodic)
Ecological site: Deep Sand
Potential native vegetation: Little bluestem, Indian ricegrass, fourwing saltbush, sand bluestem, sand sagebrush, sandhill muhly, and sideoats grama
Land capability subclass (irrigated): 3e
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 12 inches; loamy fine sand
C—12 to 60 inches; loamy fine sand
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Palma and similar soils
Composition: About 10 percent
Landscape: River valleys
Landform: Stream terraces
Slope range: 1 to 5 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border corrugation, and sprinkler irrigation are suited to this map unit.
- To prevent overirrigating and the leaching of plant nutrients, applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs.
- Because of the water intake rate, sprinkler irrigation is best suited to this map unit.
- The hazard of soil blowing can be reduced by planting a close cover crop.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- Applying nitrogen fertilizer in split applications helps to minimize leaching.
- This map unit is well suited to the production of hay and pasture.
- The use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and minimizes the erosion of earthen ditches.
- Rotational grazing helps to maintain the quality and quantity of forage.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of droughty conditions.

- Seedling mortality may be moderate because of moisture stress when the seedlings are not irrigated.
- Young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is generally suited to urban development. Because of coarse textures, however, trenches may cave in and soil blowing is a hazard.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

105—Manzano loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,100 to 5,300 feet (1,554 to 1,615 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Manzano and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Manzano

Landscape: River valleys
Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 10.3 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, western wheatgrass, alkali sacaton, galleta, blue grama, fourwing saltbush, mat muhly, and squirreltail
Land capability subclass (irrigated): 2e
Land capability subclass (nonirrigated): 4c

Typical profile:
A—0 to 9 inches; loam
Bw—9 to 21 inches; loam
Bk1—21 to 29 inches; clay loam
Bk2—29 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Rune and similar soils
Composition: About 10 percent
Slope range: 0 to 1 percent
Ecological site: Swale

Palma and similar soils
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border, corrugation, and sprinkler irrigation systems are suited to this map unit.
- Water should be applied in amounts small enough to minimize the leaching of plant nutrients.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- This map unit is well suited to the production of hay and pasture.
- Returning all crop residues to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain soil fertility and tilth.
- Rotational grazing helps to maintain the quality and quantity of forage.

Windbreaks and environmental plantings

- A wide variety of trees and shrubs can be grown in this map unit.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is well suited to urban development.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

106—Darvey loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,100 to 5,300 feet (1,554 to 1,615 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Darvey and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Darvey

Landscape: Plains
Landform: Hillslopes
Position on landform: Footslopes
Parent material: Eolian material and slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 11.0 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 33 percent
Average content of gypsum in horizon of maximum accumulation: About 2 percent
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, western wheatgrass, galleta, sideoats grama, black grama, fourwing saltbush, plains lovegrass, sand dropseed, and vine mesquite
Land capability subclass (irrigated): 3e
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 10 inches; loam
Bw—10 to 37 inches; loam
Bk—37 to 60 inches; loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Manzano and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Flooding hazard: Rare
Ecological site: Swale

Harvey and similar soils
Composition: About 5 percent
Slope range: 2 to 5 percent
Ecological site: Limy

Palma and similar soils
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Sandy

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border, corrugation, and sprinkler irrigation are suited to this map unit.
- Water needs to be applied at a slow rate over a long period of time to ensure that the root zone is properly wetted.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- The use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and minimizes the erosion of earthen ditches.
- Returning crop residue to the soil or regularly adding other organic matter improves soil fertility, minimizes crusting, and increases the water intake rate.
- Rotational grazing helps to maintain the quality and quantity of forage.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of calcium carbonates, which tie up nutrients and limit their availability.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is well suited to urban development.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

107—Rune clay loam, 0 to 1 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 5,100 to 5,300 feet (1,554 to 1,615 meters)
Mean annual precipitation: 11 to 13 inches (279 to 330 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11.1 to 12.8 degrees C)
Frost-free period: 150 to 170 days

Composition

Rune and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Rune

Landscape: River valleys
Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from limestone, sandstone, and shale
Slope range: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: 0.001 to 0.06 in/hr (very slow)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 7.5 percent (high)

Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 15 percent
Average content of gypsum in horizon of maximum accumulation: About 1 percent
Average salinity in horizon of maximum accumulation: 0 mmhos/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Swale
Potential native vegetation: Vine mesquite, western wheatgrass, alkali sacaton, galleta, blue grama, fourwing saltbush, and squirreltail
Land capability subclass (irrigated): 3s
Land capability subclass (nonirrigated): 6s
Typical profile:
A—0 to 19 inches; clay loam
Bw—19 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Darvey and similar soils
Composition: About 5 percent
Slope range: 1 to 3 percent
Ecological site: Loamy

Palma and similar soils
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Sandy

Manzano and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Flooding hazard: Rare
Ecological site: Swale

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Border and furrow irrigation are suited to this map unit.
- Because of the soil permeability, water needs to be applied at a slow rate over a long period of time to ensure that the root zone is properly wetted.
- The application of water should be regulated so that the water does not stand on the surface and damage the crops.
- Leveling helps to ensure the uniform application of water.
- Returning crop residues or adding organic matter to the soil improves soil fertility, minimizes crusting, and increases the water intake rate.
- Rotational grazing helps to maintain the quality and quantity of forage.
- Proper stocking rates, pasture rotation, and restricting grazing during wet periods help to keep the pasture in good condition and protect the soil from erosion.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of droughty conditions.
- Seedling mortality is high because of the high clay content.

- Extra care is required during planting to ensure that the soil is firmly packed around the roots.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development. The high shrink-swell potential may be a hazard.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

111—La Lande loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,500 to 4,900 feet (1,372 to 1,494 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

La Lande and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

La Lande

Landscape: River valleys
Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from sandstone and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 9.8 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (irrigated): 2e
Land capability subclass (nonirrigated): 6e
Typical profile:
Ap—0 to 12 inches; loam
Bw—12 to 37 inches; loam
Bk—37 to 60 inches; sandy clay loam

Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Alama and similar soils
Composition: About 5 percent
Slope range: 0 to 1 percent
Ecological site: Loamy

Ima and similar soils
Composition: About 5 percent
Slope range: 0 to 2 percent
Ecological site: Sandy Loam

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border, corrugation, and sprinkler irrigation are suited to this map unit.
- Water should be applied in amounts small enough to minimize the leaching of plant nutrients.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- This map unit is well suited to the production of hay and pasture.
- Returning all crop residues to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain soil fertility and tilth.
- Rotational grazing helps to maintain the quality and quantity of forage.
- Some areas may need to be land leveled for optimum crop production and water conservation.

Rangeland

- Fences, livestock water pipelines, and troughs, which facilitate range management, are suited to this map unit.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of higher amounts of carbonates, which tie up minerals and limit their availability.
- Weed control through cultivation or application of herbicides helps to remove competing vegetation.

Urban development

- This map unit is well suited to urban development.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

112—Ima sandy loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,500 to 4,900 feet (1,372 to 1,494 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Ima and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Ima

Landscape: River valleys
Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.6 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Very low
Average content of calcium carbonate in horizon of maximum accumulation: About 10 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Sandy Loam
Potential native vegetation: Blue grama, little bluestem, sideoats grama, black grama, dropseed, and plains bristlegrass
Land capability subclass (irrigated): 3e
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 10 inches; sandy loam
Bw—10 to 32 inches; fine sandy loam
Bk—32 to 60 inches; fine sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border, corrugation, and sprinkler irrigation are suited to this map unit.
- Because the water intake rate is moderately high, sprinkler irrigation is best suited to this map unit.
- To prevent overirrigating and the leaching of plant nutrients, applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the needs of the crop.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- Applying nitrogen fertilizer in split applications helps to minimize leaching.

- The use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and minimizes the erosion of earthen ditches.
- Returning all crop residues to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain soil fertility and tilth.
- Rotational grazing helps to maintain the quality and quantity of forage.

Windbreaks and environmental plantings

- A wide variety of trees and shrubs can be planted in this map unit.
- Young seedlings can suffer from sand blasting and can become covered if not protected. This problem can be controlled by maintaining strips of vegetation between plants.
- Weed control through cultivation or application of herbicides helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development.
- Trenches are subject to cave in, and wind erosion is a hazard.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

114—Alama silt loam, 0 to 1 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,500 to 4,900 feet (1,372 to 1,494 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Alama and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Alma

Landscape: River valleys
Landform: Stream terraces
Position on landform: Footslopes
Parent material: Slope alluvium derived from red bed sandstone and shale
Slope range: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 11.7 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Average content of calcium carbonate in horizon of maximum accumulation: About 8 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Loamy

Potential native vegetation: Blue grama, sideoats grama, tobosa, black grama, and vine mesquite
Land capability subclass (irrigated): 2e
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 7 inches; silt loam
Bw—7 to 60 inches; silty clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

La Lande and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Irrigated cropland and urban development

Irrigated land

- Furrow, border, corrugation, and sprinkler irrigation systems are suited to this map unit.
- Water should be applied in amounts small enough to minimize the leaching of plant nutrients.
- Yields can be maintained or increased by applying fertilizer according to needs as determined by soil tests.
- This map unit is well suited to the production of hay and pasture.
- Returning all crop residues to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain soil fertility and tilth.
- Rotational grazing helps to maintain the quality and quantity of forage.

Windbreaks and environmental plantings

- Planted trees and shrubs should be tolerant of the high amount of carbonates, which tie up nutrients and limit their availability.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- This map unit is suited to urban development.
- Soil blowing is a hazard.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

116—Bluhol loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 70
Elevation: 4,500 to 4,900 feet (1,372 to 1,494 meters)
Mean annual precipitation: 12 to 14 inches (304 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Bluhol and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Bluhol

Landscape: River valleys
Landform: Open depressions and stream terraces
Position on landform: Footslopes and toeslopes
Parent material: Slope alluvium derived from mixed sources
Slope range: 0 to 2 percent
Drainage class: Poorly drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 0.5 inch (very low)
Shrink-swell potential: About 1.5 percent (low)
Seasonal high water table depth: About 12 to 36 inches
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: About 40 percent
Average salinity in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Wet Meadow
Potential native vegetation: Alkali sacaton, inland saltgrass, cane bluestem, rush, sedge, and vine mesquite
Land capability subclass (irrigated): 6s
Land capability subclass (nonirrigated): 6c
Typical profile:
A—0 to 4 inches; loam
By—4 to 60 inches; gypsiferous sandy loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Reeves and similar soils
Composition: About 5 percent
Slope range: 1 to 5 percent
Ecological site: Loamy

Lacoca and similar soils
Composition: About 5 percent
Slope range: 10 to 25 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Ecological site: Shallow Sandstone

Use and Management

Major Land Uses: Livestock grazing, pasture, and urban development

Typical uses

- This map unit is suited to such range management practices as proper grazing use and deferred grazing.

- Mechanical practices which require mechanical equipment are not practical because of the seasonal high water table.

Windbreaks and environmental plantings

- The kinds of trees and shrubs suitable for planting are limited.
- The high water table, a high soil pH, and high salt concentrations affect the selection and growth of plant species.
- Seedling mortality is severe because of the somewhat poorly drained conditions.
- Spring plantings may be delayed because of the excess moisture conditions.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- The Bluhol soil is very poorly suited to urban development.
- The main limitations are the shallow depth to water, corrosivity, and the hazard of soil blowing.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

120—Sparks loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 77
Elevation: 4,000 to 5,300 feet (1,220 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Sparks and similar soils: 90 percent
Minor components: 10 percent

Component Descriptions

Sparks

Landscape: Plains
Landform: Plateaus
Position on landform: Footslopes
Parent material: Eolian material and alluvium derived from the Ogallala Formation
Slope range: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 10.6 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 30 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Loamy

Potential native vegetation: Blue grama, sideoats grama, hairy grama, black grama, buffalograss, little bluestem, plains bristlegrass, sand dropseed, and tobosa
Land capability subclass (irrigated): 2s
Land capability subclass (nonirrigated): 4c
Typical profile:
A—0 to 8 inches; loam
Bt—8 to 39 inches; clay loam
Bk—39 to 60 inches; clay loam
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Their Morphology" section.

Minor Components

Slaughter and similar soils
Composition: About 10 percent
Slope range: 0 to 2 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Ecological site: Shallow

Use and Management

Major Land Uses: Livestock grazing, pasture, and urban development

Typical uses

- This map unit is suited to such range management practices as proper grazing use and deferred grazing.
- Mechanical practices which require mechanical equipment are not practical because of the seasonal high water table.

Windbreaks and environmental plantings

- The kinds of trees and shrubs suitable for planting are limited.
- The high water table, a high soil pH, and high salt concentrations affect the selection and growth of plant species.
- Seedling mortality is severe because of the somewhat poorly drained conditions.
- Spring plantings may be delayed because of the excess moisture conditions.
- Weed control through cultivation or application of herbicide helps to remove competing vegetation.

Urban development

- The Bluhol soil is very poorly suited to urban development.
- The main limitations are the shallow depth to water, corrosivity, and the hazard of soil blowing.

For more information about managing this map unit, see the sections "Soil Properties" and "Use and Management of the Soils."

121—Slaughter loam, 0 to 2 percent slopes

Setting

Major Land Resource Area: 77
Elevation: 4,000 to 5,300 feet (1,220 to 1,615 meters)
Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)
Mean annual air temperature: 58 to 60 degrees F (14.4 to 15.6 degrees C)
Frost-free period: 180 to 200 days

Composition

Slaughter and similar soils: 85 percent
Minor components: 15 percent

Component Descriptions

Slaughter

Landscape: Plains
Landform: Plateaus
Position on landform: Shoulders
Parent material: Eolian material and alluvium derived from the Ogallala Formation
Slope range: 0 to 2 percent
Content of surface fragments: About 3 percent
Depth to restrictive feature: 9 to 20 inches to petrocalcic material
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 2.7 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Average content of calcium carbonate in horizon of maximum accumulation: About 3 percent
Average content of gypsum in horizon of maximum accumulation: None
Average salinity in horizon of maximum accumulation: 1 mmho/cm (nonsaline)
Average sodium adsorption ratio in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Shallow
Potential native vegetation: Blue grama, buffalograss, tobosa, cane bluestem, sideoats grama, and vine mesquite
Land capability subclass (irrigated): 4s
Land capability subclass (nonirrigated): 4e
Typical profile:
A—0 to 6 inches; loam
Bt—6 to 16 inches; clay loam
Bkm—16 to 26 inches; petrocalcic material
Note—A complete soil description with range in characteristics is included, in alphabetical order, in the “Soil Series and Their Morphology” section.

Minor Components

Sparks and similar soils
Composition: About 15 percent
Slope range: 0 to 2 percent
Ecological site: Loamy

Use and Management

Major Land Uses: Livestock grazing and wildlife habitat

Typical uses

- Fences and livestock water pipelines and troughs that supply water to livestock, which facilitate range management, are suited to this map unit.
- The construction of earthen ponds is not practical because of the very shallow or shallow depth to indurated caliche.

For more information about managing this map unit, see the sections “Soil Properties” and “Use and Management of the Soils.”

DAM—Dam

This map unit consists of barriers built across waterways in order to control the flow of or raise the level of surface water.

No interpretations are assigned to this map unit.

W—Water

This map unit consists of areas of natural or constructed bodies of surface water.

No interpretations are assigned to this map unit.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact

Figure 10.—Acequias, or irrigation ditches, from the Pecos River provide the water necessary for crop and pasture irrigation.

on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, and the estimated yields of crops, hay, and pasture are given for specific soils.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Irrigated Cropland

Guadalupe County has about 3,380 acres of irrigated cropland and irrigated pastureland. Areas of this land are along the Pecos River.

Water for most of the irrigated cropland is delivered by canal from diversions of the Pecos River to several acequias and ditch groups (fig. 10). Irrigation water is

adequate for good crop yields during most years but may not be available every year. Consideration should be given to the snow pack when selecting crops. Crops such as winter wheat and sorghum use less water than other crops.

The main crops are alfalfa for hay, improved pasture, and small grains for pasture and hay. Other crops planted in small amounts include vegetables, orchard crops, corn, and grain sorghums. There is good potential for the production of high-value crops, such as vegetables. Available markets and reliable irrigation water are needed for the production of such crops.

The major resource concerns for cropland are managing irrigation water, maintaining soil condition, and controlling wind erosion. Irrigation water management consists of determining and controlling the proper rate, amount, and timing of water applications in a planned and efficient manner. An irrigation system should be well designed and based on the characteristics of the soil and the crops to be grown. Application of the proper amount of irrigation water and prevention of overirrigating are essential for obtaining high yields and conserving water. Conservation practices, such as the use of irrigation pipelines, land leveling, gated pipe, subsurface drip, sprinkler systems, or ditch linings, help to conserve water, improve efficiency, minimize erosion, and increase productivity.

Irrigation systems that rely on the acequias and ditch groups have a disadvantage affecting good management. The manager cannot request the amount of water needed on the day the crop needs the water. Well systems can apply water based on crop needs and in the amount required.

Several management practices designed to maintain soil condition and control wind erosion are applicable to all of the irrigated soils in the survey area (fig. 11). These practices include the use of conservation cropping systems, crop residue management, cover and green manure crops, pest management, and nutrient management.

Nonirrigated Cropland

Guadalupe County has about 2,710 acres of nonirrigated cropland, mostly in the eastern part. This cropland is in the Southern High Plains Major Land Resource Area. Farming without irrigation is limited by the low and uncertain precipitation and the hazard of wind erosion.

Conservation measures such as gradient terracing (which controls water erosion), grass buffers (or grass waterways), and residue management (mulch-till) are commonly used to control erosion.

Pasture

The major management practices for pasture are nutrient management, weed control, clipping after grazing for the removal of undesirable forage and weeds, harrowing in order to scatter the manure, and rotational grazing. Fertilizer should be applied according to plant needs, the level of production desired, and the results of soil tests. Prescribed grazing is an important part of the management system.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units used for crops and pasture in the survey area also is shown in the table.

Figure 11.—An area of Darvey loam, 0 to 2 percent slopes. Irrigated pasture is one of the many uses of this soil.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change (fig. 12).

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(16)*. Crops that require special management are excluded.

The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Figure 12.—Dryland crops, such as wheat (in the foreground), grow on Sparks loam, 0 to 2 percent slopes.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The land capability classifications of map units in this survey area are given in the section “Detailed Soil Map Units.”

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 5 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The main map unit in the survey area that is considered prime farmland is Manzano loam, 0 to 2 percent slopes. The location of this map unit is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

About 1,200 acres in the survey area, or nearly 0.1 percent of the total acreage, meets the soil requirements for prime farmland. Areas of this land are in the northern part of the county along the Pecos River. About 1,200 acres, or nearly 0.1 percent of the survey area, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

Figure 13.—An area of La Fonda-Palma fine sandy loams, 5 to 15 percent slopes. These soils occur below escarpments and are in the Sandy Ecological Site, in the western part of the county.

Rangeland

Jerry Sparks, Range Conservationist, Natural Resources Conservation Service, helped prepare this section.

Rangeland is land on which the potential natural vegetation is predominantly grasses, grass-like plants, forbs, or shrubs suitable for grazing or browsing. In areas that have similar climate and topography, the kind and amount of vegetation produced on rangeland are closely related to the kind of soil (figs. 13 and 14). Effective management is based on knowledge about the relationship among soils, vegetation, and water.

A potential natural plant community is an association of plants that are best adapted to a unique combination of environmental factors. Even on the same soil, these plants vary naturally in their proportions or production from place to place and year to year. The dominant plant or plants are used to characterize the plant community because of their relative stability where abnormal disturbance or physical site deterioration has not occurred. The grasses, forbs, and shrubs that characterize the potential native vegetation on each major soil are listed by common plant name in the map unit descriptions.

About 97 percent of the survey area is rangeland that produces grasses, shrubs, and forbs suitable for grazing or browsing by livestock. Livestock production on rangeland is one of the sources of agricultural income in Guadalupe County.

The rangeland in the survey area is suitable for grazing during any season of the year. In winter, however, most ranchers supplement the native forage with high-quality hay or protein concentrate. Year-round cow-calf and yearling-stocker operations are the dominant ranch enterprises, but both cattle and sheep are grazed in the western part of the survey area. The size of the ranches varies from a few hundred acres to as much as 60,000 acres.

Figure 14.—An area of Gallen very gravelly sandy loam, 5 to 30 percent slopes, which is in the Gravelly Ecological Site.

The information in this section and in the section “Detailed Soil Map Units” can be used in planning a range management program that can increase forage production and provide adequate protection for the soils.

Table 6 shows the ecological site and the total dry weight production of vegetation in favorable, normal, and unfavorable years. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the “Field Office Technical Guide,” which is available at the local office of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year’s growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and

unfavorable years. In a *favorable year,* the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a *normal year,* growing conditions are about average. In an *unfavorable year,* growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the “National Range and Pasture Handbook” and in the electronic “Field Office Technical Guide” (eFOTG) at http://www.nrcs.usda.gov/technical/efotg.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Hydric Soils

In this section, hydric soils are defined and described. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 6, 10, 11)*. Criteria for each of the characteristics must be met for areas to be identified as wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(4)*. The criteria are used to identify a phase of a soil series that normally is also a hydric soil. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(13)* and “Keys to Soil Taxonomy” *(14)* and in the “Soil Survey Manual” *(17)*.

If soils are wet enough for a long enough period to be considered hydric, they generally exhibit certain properties that can be observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” *(5)*.

For information regarding hydric soils in the soil survey area, refer to the USDA Natural Resources Conservation Service Soil Data Mart at http://soildatamart.nrcs.usda.gov.

Figure 15.—An area of Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes. This map unit has a substantial woody component with oneseed juniper and pinyon.

Woodland Management and Productivity

Jerry Reioux, Forester, Natural Resources Conservation Service, helped prepare this section.

This section presents information about the suitability of the soils for the production of wood products. In Guadalupe County, the soils that support woodland are mainly in the Anton Chico area and on the flood plains of the Pecos River.

About 44,500 acres, or about 2.3 percent of the survey area, is woodland. Pinyon and oneseed juniper are the major species (fig. 15). Plains cottonwood is the primary species along the Pecos River. Areas of pinyon and juniper comprise 38,000 acres.

Some soils support juniper savannahs. These savannahs have scattered juniper with an understory of grasses, forbs, and shrubs.

Pinyon and juniper grow best in areas above 5,600 feet. They are, however, at lower elevations on north-facing slopes. Pinyon and juniper are extensively utilized for fuelwood, fence posts, stays, and ornamentals. Pinyons are good as Christmas trees and in some years provide edible nuts.

Cottonwood grows along the Pecos River plains. This tree has been extensively utilized for fuelwood and other products.

In the areas of pinyon and juniper, the understory is used for livestock grazing. Areas which are very dense should be managed by thinning and other practices in order to obtain maximum production of both the understory and overstory.

Soils that support stands of pinyon and juniper are Deama and Tuloso. Bond soils, as mapped in the vicinity of Colonias and along the Pintada Arroyo, also support stands of pinyon and juniper.

Good management practices include protection from fire, insects, and disease; thinnings that improve tree growth and quality; and good management of the watershed.

Good management of the watershed can be achieved by the proper placement

WOODLAND MANAGEMENT AND PRODUCTIVITY

Map symbol and soil name	Ordination symbol	Commonly grown trees	Site index	Erosion hazard	Equipment restriction	Windthrow hazard	Plant competition	Seedling mortality
57---------- Tuloso	1D	oneseed juniper pinyon	35	Slight	Moderate	Severe	Slight	Moderate
58---------- Deama	1D	oneseed juniper pinyon	20	Slight	Moderate	Severe	Slight	Moderate

Figure 16.—Interpretations for woodland management and productivity for the soils in the survey area suitable for wood crops.

and treatment of roads and other areas that are disturbed by woodland operations. Constructing water bars and then seeding the area to grasses, forbs, and browse species help to minimize erosion. Leaving a buffer strip of undisturbed soil and vegetation on both sides of a water course or carefully controlling access during woodland operations help to minimize water erosion and sedimentation and protect water quality.

The information provided in figure 16 can be used by woodland owners in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The figure lists the ordination symbol. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The greater the number the greater the productivity. The second part of the symbol, a letter, indicates certain soil or physiographic characteristics that contribute to important hazards or limitations in management. The letter “D” indicates restricted root depth.

Commonly grown trees refers to those native tree species used for wood crops.

The potential productivity of merchantable or *commonly grown trees* is expressed as *site index.* The site index for the pinyon-juniper type is the basal area in square feet of all trees over 4.5 feet in height when the trees have an average diameter of 5 inches at 1 foot above the ground. The site index applies to fully stocked, even-aged, unmanaged stands. This soil survey utilized curves developed for pinyon-juniper *(15)*.

In figure 16, slight, moderate, and severe indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of the loss of soil that may occur as a result of site preparation and cutting operations where the soil is exposed along roads and trails. The risk is *slight* if no particular measures are needed under ordinary conditions.

Ratings of *equipment restriction* reflect the limits on the use of equipment generally needed in harvesting year-round, or seasonally, as a result of soil characteristics. A rating of *slight* indicates equipment use is not restricted in kind or time of year because of soil factors. A rating of *moderate* indicates equipment use is restricted because of one or more soil factors, such as stones, extremes of soil texture, soil instability, or a combination of two or more factors.

Ratings of *windthrow hazard* are based on soil characteristics, such as rooting depth, soil texture and structure, and soil wetness. A rating of *slight* indicates that strong winds may break trees, but none are blown down. A rating of *moderate* indicates that an occasional tree may be blow down during periods of soil wetness and moderate or strong winds. *Severe* indicates that many trees are expected to be blow down during periods of excessive soil wetness and moderate or strong winds.

Plant competition ratings indicate the degree to which undesirable plants are expected to invade when openings are made in the canopy. A rating of *slight* indicates that competition from unwanted plants is not likely to prevent the development of natural regeneration or suppress the more desirable plants. A rating of *moderate* indicates that competition may delay natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. A rating of *severe* indicates that plant competition is expected to prevent natural regeneration unless the soil is extensively prepared or managed to control undesirable plants.

Seedling mortality ratings indicate the degree to which the soil and topography affect the mortality of tree seedlings. Plant competition is not considered in the ratings. A rating of *slight* indicates that expected mortality is less than 25 percent; *moderate*, that expected mortality is 25 to 50 percent; and *severe*, that extra precautions are important because expected mortality is greater than 50 percent.

Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. Most woodland, if well managed, can produce enough understory vegetation to support grazing by livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation varies according to the kinds of soil, the age and kinds of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive. Increased understory production can be obtained by selectively thinning and reducing the density of the canopy to a desired level.

The understory plant species for management of the woodland understory vegetation are given in the section “Detailed Soil Map Units.”

Windbreaks and Environmental Plantings

Jerry Reioux, Forester, Natural Resources Conservation Service, helped prepare this section.

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens and furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland from wind, keep snow on fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 7 shows the height that locally grown trees and shrubs are expected to reach, when irrigated, on various soils. The estimates in the table are based on measurements and observations of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens.

In order for windbreaks to fulfill their intended purpose, the species of trees or shrubs selected must be adapted to the soils. Matching the proper plants with the soil type is the first step towards ensuring survival. Proper selection also ensures a rapid rate of growth and longevity.

The soil characteristics that greatly affect the rate of growth of trees and shrubs are permeability, available water capacity, depth to bedrock, percentage of clay, and amount of carbonates.

Grazing is detrimental to windbreaks and environmental plantings because livestock compact the soil and remove the lower branches of the trees and shrubs. Soil compaction retards growth, and the removal of the lower branches reduces the effectiveness of the windbreak. Weeds and insects prevent maximum growth. Clean cultivation and applications of herbicide help to control weeds. Fallowing a year before planting helps to provide a supply of moisture, which is needed before the seedlings can be established. Because planting sites on Chispa, Redona, Ima, La Lande, Harvey, and Mido soils are subject to wind erosion, sites on these soils should be prepared in the spring.

Shallow soils and soils with high water tables have severe limitations for the establishment of windbreaks and environmental plantings. In some instances, plantings can be successfully established on these soils by proper species selection and specialized management.

Lack of moisture is very limiting for tree and shrub survival in most of the urban and cropland areas of the soil survey. Watering with drip irrigation or other methods of irrigation is required for an acceptable survival rate of seedlings and continued growth.

Additional information on planning windbreaks and screens and on plantings and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service or from a commercial tree nursery.

Recreation

The soils of the survey area are rated in table 8, parts I and II, according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Figure 17.—An area of Alama silt loam, 1 to 5 percent slopes. This map unit is somewhat limited to very limited for use as wildlife habitat due to the arid climate and extreme soil temperatures.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover (fig. 17). Soils also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, parts I and II, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. The degree and kind of soil suitability are given for grain and seed crops used for food and cover, domestic grasses and legumes used for food and cover, irrigated grain and seed crops used for food and cover, upland wild herbaceous plants, and upland desertic shrubs and trees. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The ratings are of an ordinal measurement scale using both descriptive and numerically ranked values. Rating class descriptive terms indicate how well the soils are suited according to the soil features. *Well suited* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. *Suited* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. *Poorly suited* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Rock outcrops furnish wildlife habitat when they occur as cliffs below rims of plateaus, mesas, and canyons. Although little or no vegetation grows on rock outcrops, they are still important to many species. Eagles, hawks, turkey vultures, owls, and swallows nest on cliffs and ledges. Migratory bats seasonally roost in cracks and caves. Foxes, bobcats, coyotes, ringtail cats, and cougars have dens in alcoves and caves.

The elements of wildlife habitat are described in the following paragraphs.

Ratings for *grain and seed crops for food and cover* provide guidelines in the selection of sites that reflect the soil properties and plant species necessary to sustain wildlife habitat and do not reflect those necessary for commercial agronomic production. Soil properties and features that affect the growth of grain and seed crops are soil texture, organic mater content, the amount of rock fragments on or near the soil surface, available water capacity, depth to bedrock or pan, soil moisture and temperature regime, depth to a high water table, soil moisture and temperature regime, ponding and flooding, permeability into the soil surface, slope, presence of excess salts, and susceptibility of the soil surface to water and wind erosion. Examples of grain and seed crops are corn, wheat, oats, sorghum, and barley.

Ratings for *domestic grasses and legumes for food and cover* provide guidelines in the selection of sites that reflect soil properties and plant species necessary to sustain wildlife habitat and do not reflect those necessary for commercial agronomic production. Soil properties and features that affect the growth of grasses and legumes are soil texture, organic mater content, the amount of rock fragments on or near the soil surface, available water capacity, depth to bedrock or pan, soil moisture and temperature regime, depth to a high water table, soil moisture and temperature regime, ponding and flooding, permeability into the soil surface, slope, presence of excess salts, and susceptibility of the soil surface to water and wind erosion. Examples of grasses and legumes are fescue, lovegrass, bromegrass, plains bristlegrass, clover, and alfalfa.

Ratings for *irrigated grain and seed crops for food and cover* provide guidelines in the selection of sites that reflect soil properties and plant species necessary to sustain wildlife habitat and do not reflect those necessary for commercial agronomic production. Soil properties and features that affect the growth of grain and seed crops are soil texture, organic mater content, the amount of rock fragments on or near the soil surface, available water capacity, depth to bedrock or pan, depth to a high water table, ponding and flooding, permeability into the soil surface, slope, presence of excess salts, and susceptibility of the soil surface to water and wind erosion. Examples of grain and seed crops are corn, wheat, oats, sorghum, and barley.

Ratings for *upland wild herbaceous plants* provide guidelines for determining soil quality as a medium for growing a diverse upland herbaceous plant community which is adapted to soil conditions that are drier than those common in the moist riparian and wetland zones but that are not as dry as those in the upland desert areas. Soil properties and features that affect the ability of these species to thrive include soil texture, available water capacity, the presence of excess salts in the soil, soil moisture and temperature regimes, depth to a high water table, and the presence of rock fragments at the soil surface. Examples of upland wild herbaceous plants are bottlebrush squirreltail, western wheatgrass, Indian ricegrass, mutttongrass, and wolftail.

Ratings for *upland desertic shrubs and trees* provide guidelines for determining soil quality as a medium for growing a diverse upland herbaceous plant community which is adapted to soil conditions in an arid or semiarid environment that is drier than that common to moist riparian and wetland zones and subhumid, humid, or tropical areas. Soil properties and features that affect the ability of these species to thrive include soil texture, available water capacity, depth to a high water table, the

presence of excess salts in the soil, soil reaction (pH), soil moisture and temperature regimes, and the presence of rock fragments at the soil surface. Examples of upland desertic shrubs and trees are oneseed juniper, twoneedle pinyon, Wyoming big sagebrush, fourwing saltbush, catclaw acacia, sand sage, and winterfat.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, agricultural waste management, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction,

and maintenance. Table 10, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments (fig. 18).

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred

Figure 18.—An area of San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes. The San Jon part of this map unit is not limited for use as dwellings without basements, but the Lacoca part is very limited due to the depth to hard bedrock.

from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 11, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses.

Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture,

stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils

with properties that favor waste management can help to prevent environmental damage.

Table 12, parts I and II, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a

cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system.

Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Construction Materials

Table 13, parts I and II, give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A

rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14, parts I and II, give information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; aquifer-fed excavated ponds; and

Figure 19.—Area of Pastura-Silver-Gabaldon complex, 0 to 5 percent slopes. Careful consideration is needed for pond reservoir sites. The Pastura soil is very limited due to depth to cemented pan, the Silver soil is not limited, and the Gabaldon soil is somewhat limited due to seepage.

irrigation systems. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment (fig. 19). Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment.

Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The methods that could be used are sprinkler, drip or trickle, furrow, graded border, or basin or paddy irrigation systems. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. Soil properties are ascertained by field examination of the soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, calcium carbonate content, and salinity.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 15 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In table 16, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. The estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root

penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour or micrometers per second (um/sec), when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 16 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1

are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity (EC) of the saturation extract, in millimhos per centimeter (mmhos/cm) or decisiemens per meter (dS/M) at 25 degrees C. Estimates are based

on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 18 indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 18 indicates the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the

chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of

uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(12, 13)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Argid (*Arg*, meaning an increase in clay, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Calciargid (*Calci*, indicating a calcic horizon within a depth of 150 cm, plus *argid*, the suborder of the Aridisols that has a aridic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Ustic* identifies the subgroup that typifies the great group. An example is Ustic Calciargids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, superactive, thermic Ustic Calciargids.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each

series. A pedon, a small three-dimensional area of soil that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(17)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(13)* and in “Keys to Soil Taxonomy” *(12)*. Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

Alama Series

The soils in the Alama series are classified as fine-silty, mixed, superactive, thermic Ustic Haplocambids. These deep, well drained soils formed in alluvium derived mainly from red bed shale and sandstone. They are on footslopes and toeslopes of pediment slopes, alluvial fans, and terraces. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Alama silt loam, 1 to 5 percent slopes; about 25 miles east of Santa Rosa, 200 feet north and 2,550 feet west of the southeast corner of section 15, T. 8 N., R. 26 E.

A—0 to 3 inches; reddish brown (5YR 5/4) silt loam, dark reddish brown (5YR 3/4) moist; thin platy structure in the upper 0.5 inch, over moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; many very fine and fine pores; common clusters of fine rounded wormcasts; slightly effervescent; moderately alkaline; clear smooth boundary.

Bw1—3 to 8 inches; reddish brown (5YR 5/4) silty clay loam, dark reddish brown (5YR 3/4) moist; weak coarse prismatic and moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine and fine pores; common clusters of fine rounded wormcasts; slightly effervescent; slightly alkaline; clear smooth boundary.

Bw2—8 to 18 inches; reddish brown (5YR 5/4) silty clay loam, dark reddish brown (5YR 3/4) moist; weak coarse prismatic and moderate fine subangular blocky structure; hard, friable, slightly sticky and plastic; many fine roots; many very fine and fine pores; few clusters of fine rounded wormcasts; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bw3—18 to 28 inches; reddish brown (5YR 5/4) silt loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine roots; common very fine and few fine pores; few clusters of fine rounded wormcasts; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bk1—28 to 40 inches; reddish yellow (5YR 6/6) silt loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and plastic; few fine roots; common very fine and few fine pores; calcium carbonate segregated in few fine masses and in seams; violently effervescent; moderately alkaline; gradual wavy boundary.

2Bk2—40 to 60 inches; reddish yellow (5YR 6/6) loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; few very fine and fine pores; calcium carbonate segregated in few fine concretions; strongly effervescent; moderately alkaline.

The A horizon has hue of 2.5YR to 7.5YR, value of 3 to 6 dry (3 or 4 moist), and chroma of 4 to 6. The Bw, Bk, and 2Bk horizons have hue of 2.5YR to 7.5YR, value of 3 to 7 dry (3 to 6 moist), and chroma of 3 to 6. Some pedons have BCk or C horizons below a depth of 60 inches.

Berwolf Series

The soils in the Berwolf series are classified as coarse-loamy, mixed, superactive, thermic Ustic Calciargids. These deep, well drained soils formed in alluvial and eolian materials derived mainly from sandstone and shale. They are in swales and on toeslopes. Slope ranges from 1 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Berwolf fine sandy loam in an area of Redona-Berwolf fine sandy loams, 1 to 5 percent slopes; about 20 miles south of Santa Rosa, 220 feet west and 1,760 feet south of the northeast corner of section 15, T. 5 N., R. 22 E.

A—0 to 6 inches; reddish brown (5YR 4/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; few fine interstitial and tubular pores; neutral; clear smooth boundary.

Bt1—6 to 19 inches; yellowish red (5YR 4/6) fine sandy loam, dark reddish brown (5YR 3/4) moist; weak coarse prismatic structure parting to weak coarse subangular blocky; slightly hard, very friable, nonsticky and slightly plastic; common fine roots; common fine tubular and few fine interstitial pores; few distinct clay bridges on sand grains and few faint clay films on faces of peds; neutral; clear smooth boundary.

Bt2—19 to 33 inches: yellowish red (5YR 4/6) fine sandy loam, reddish brown (5YR 4/4) moist; weak coarse prismatic structure parting to moderate coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine tubular and interstitial pores; common distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt3—33 to 41 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; moderate coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; common fine tubular and few fine interstitial pores; common distinct clay films on faces of peds; moderately alkaline; clear wavy boundary.

BCk1—41 to 55 inches; pink (5YR 7/3) fine sandy loam, pink (5YR 7/4) moist; weak medium subangular blocky structure; hard, very friable, nonsticky and nonplastic; 10 percent concretions of calcium carbonate; calcium carbonate engulfed; violently effervescent; moderately alkaline; abrupt wavy boundary.

BCk2—55 to 60 inches; pinkish white (5YR 8/2) fine sandy loam, pinkish gray (5YR 7/2) moist; weak medium and coarse subangular blocky structure; very hard, friable, nonsticky and nonplastic; 10 to 15 percent concretions of calcium carbonate; calcium carbonate engulfed; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 30 to 50 inches.

The A horizon is loamy fine sand or fine sandy loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 2 to 6. The Bt horizon is fine sandy loam or sandy loam. It has hue of 2.5YR to 7.5YR, value of 3 to 6 dry (3 to 5 moist), and chroma of 4 to 8. The BCk horizon is loamy fine sand, loam, or sandy loam. It has hue of 2.5YR to 7.5YR, value of 5 to 8 dry (4 to 7 moist), and chroma of 4 to 8.

Bluhol Series

The soils in the Bluhol series are classified as coarse-loamy, gypsic, thermic Aeric Endoaquepts. These deep, poorly drained soils formed in alluvium derived mainly from gypsiferous sources. They are in depressions and on low terraces. Slope ranges

from 0 to 2 percent. Elevation ranges from 4,500 to 4,900 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Bluhol loam, 0 to 2 percent slopes; about 0.5 mile south of Santa Rosa, 900 feet north and 900 feet west of the southeast corner of section 11, T. 8 N., R. 21 E. (Colors are for moist soil unless otherwise noted.)

A—0 to 4 inches; very dark brown (10YR 2/2) loam, dark brown (10YR 3/3) dry; moderate medium platy structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and fine tubular pores; common fine and medium masses of calcium carbonate; violently effervescent; common fine and medium masses of gypsum; slightly alkaline; clear wavy boundary.

Bw1—4 to 7 inches; brown (7.5YR 5/4) gypsiferous sandy loam, pinkish gray (7.5YR 7/2) dry; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; disseminated gypsum and calcium carbonate; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bw2—7 to 18 inches; brown (7.5YR 5/4) gypsiferous sandy loam, pinkish gray (7.5YR 6/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular and interstitial pores; disseminated gypsum and calcium carbonate; slightly effervescent; neutral; gradual smooth boundary.

Bg—18 to 32 inches; pinkish gray (7.5YR 6/2) gypsiferous sandy loam, pinkish white (7.5YR 8/2) dry; massive; soft, very friable, nonsticky and nonplastic; disseminated gypsum and calcium carbonate; common distinct fine and medium light gray (7.5YR 7/2) iron depletions; strongly effervescent; neutral; gradual smooth boundary.

BCg—32 to 60 inches; brown (7.5YR 5/4) gypsiferous sandy loam, very pale brown (10YR 8/2) dry; massive; soft, very friable, nonsticky and nonplastic; disseminated calcium carbonate; common distinct light gray (10YR 7/2) iron depletions; strongly effervescent; common medium masses of gypsum; neutral.

Depth to distinct or prominent iron depletions with chroma of 2 or less ranges from 10 to 20 inches. The content of gypsum ranges from 30 to 60 percent in the control section. The content of gypsum plus calcium carbonate is greater than 40 percent. The water table is at a depth of 1 to 3 feet.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5 dry (2 or 3 moist), and chroma of 1 to 3. The Bw horizon is sandy loam or silt loam. It has hue of 7.5YR to 2.5Y, value of 5 to 7 dry (4 to 6 moist), and chroma of 1 to 6. The Bg and BCg horizons are sandy loam, fine sandy loam, loam, or silt loam in the fine-earth fraction. They have hue of 7.5YR to 2.5Y, value of 5 to 8 dry (4 to 8 moist), and chroma of 1 to 4.

Bond Series

The soils in the Bond series are classified as loamy, mixed, superactive, mesic Lithic Ustic Haplargids. These very shallow or shallow, well drained soils formed in alluvial and eolian materials derived mainly from sandstone. They are on mesas and ridges. Slope ranges from 1 to 10 percent. Elevation ranges from 5,600 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 54 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Bond fine sandy loam in an area of Bond-Hagerman complex, 1

to 10 percent slopes; about 8 miles north of Vaughn, on Mesa Leon, 2,000 feet east and 700 feet north of the southwest corner of section 24, T. 6 N., R. 16 E.

A—0 to 3 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common fine pores; moderately alkaline; clear smooth boundary.

Bt—3 to 14 inches; strong brown (7.5YR 4/6) clay loam, dark brown (7.5YR 3/4) moist; strong medium subangular blocky structure; soft, friable, sticky and plastic; many very fine and fine roots; common very fine and fine interstitial pores; continuous distinct clay films on faces of peds and lining pores; moderately alkaline; abrupt wavy boundary.

R—14 to 24 inches; hard bedrock.

Depth to hard bedrock ranges from 6 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 (4 or 5 moist), and chroma of 3 or 4. The Bt horizon is sandy clay loam or clay loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 6 moist), and chroma of 4 to 6.

Cardenas Series

The soils in the Cardenas series are classified as loamy, mixed, superactive, mesic, shallow Calcic Petrocalcids. These soils are shallow to a petrocalcic horizon. They are well drained and formed in eolian materials derived mainly from mixed sources. They are on nearly level knolls and ridges. Slope ranges from 0 to 3 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Cardenas loamy fine sand in an area of Cardenas-Palma loamy fine sands, 0 to 3 percent slopes; about 8 miles southwest of Santa Rosa, 2,200 feet north and 360 feet east of the southwest corner of section 14, T. 7 N., R. 20 E.

A—0 to 4 inches; brown (7.5YR 4/4) loamy fine sand, dark brown (7.5YR 3/4) moist; weak fine and medium granular structure; loose, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine irregular interstitial pores; 5 percent caliche cobbles and pebbles; slightly alkaline; clear wavy boundary.

Bk1—4 to 9 inches; brown (7.5YR 4/4) fine sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; very soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine irregular interstitial pores; 10 percent caliche pebbles; common medium and fine nodules of calcium carbonate; violently effervescent; slightly alkaline; clear wavy boundary.

Bk2—9 to 14 inches; brown (7.5YR 5/4) fine sandy loam, strong brown (7.5YR 4/6) moist; weak medium and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine irregular interstitial pores; 10 percent caliche pebbles; common fine and medium nodules of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—14 to 24 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 10 to 20 inches but is typically 10 to 15 inches. The content of coarse fragments ranges from 0 to 20 percent but is typically 5 to 15 percent.

The content of calcium carbonate, in the form of masses, concretions, and nodules, ranges from 5 to 15 percent, by volume.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4. The B horizon is fine sandy loam or gravelly fine sandy loam. It has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4.

Chispa Series

The soils in the Chispa series are classified as fine-loamy, mixed, superactive, thermic Ustic Haplocalcids. These deep, well drained soils formed in loamy sediments derived mainly from sandstone and shale. They are on ridges and fans of broad valleys. Slope ranges from 2 to 15 percent. Elevation ranges from 4,200 to 5,200 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Chispa fine sandy loam in an area of La Lande-Chispa complex, 3 to 15 percent slopes; about 5 miles northeast of Colonias; New Mexico State Plane Coordinates of east 359,100 feet and north 1,522,000 feet:

A—0 to 8 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; few fine and common medium tubular and interstitial pores; few very fine masses and concretions of calcium carbonate: strongly effervescent; moderately alkaline; clear smooth boundary.

Bk1—8 to 22 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium tubular pores; common fine and medium masses and few fine concretions of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bk2—22 to 50 inches; pink (7.5YR 7/4) loam, light brown (7.5YR 6/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores; many medium and large masses of calcium carbonate; violently effervescent; moderately alkaline; clear wavy boundary.

Bk3—50 to 60 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium tubular pores; common fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4. The Bk horizon is loam, sandy clay loam, or clay loam. It has hue of 5YR or 7.5YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 3 to 6. The calcium carbonate equivalent ranges from 15 to 35 percent.

Clovis Series

The soils in the Clovis series are classified as fine-loamy, mixed, superactive, mesic Ustic Calciargids. These deep, well drained soils formed in loamy sediments and eolian materials derived mainly from sandstone, shale, and limestone. They are on broad valleys and hillslopes. Slope ranges from 0 to 5 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Clovis loam in an area of Clovis-Pastura association, 0 to 3

percent slopes; about 6 miles south of Pastura, 2,550 feet east and 1,800 feet north of the southwest corner of section 3, T. 5 N., R. 19 E.

A—0 to 7 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; few very fine tubular pores; slightly alkaline; clear smooth boundary.

Bt1—7 to 14 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine and common medium roots; few very fine tubular pores; common faint clay films on faces of peds; slightly alkaline; gradual smooth boundary.

Bt2—14 to 20 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; strong medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common fine and medium roots; few fine tubular pores; common distinct clay films on faces of peds; disseminated calcium carbonate; slightly effervescent; slightly alkaline; clear wavy boundary.

Btk—20 to 31 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 5 percent pebble-sized concretions of calcium carbonate; few fine concretions of calcium carbonate; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bk—31 to 60 inches; pink (7.5YR 7/4) loam, light brown (7.5YR 6/4) moist; weak coarse subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many fine interstitial and tubular pores; 5 percent pebble-sized concretions of calcium carbonate; few fine concretions and masses of calcium carbonate; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 20 to 36 inches.

The A horizon is fine sandy loam or loam. It has hue of 5YR to 10YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 2 to 4. The Bt and Bk horizons are loam, sandy clay loam, or clay loam. They have hue of 2.5YR to 7.5YR, value of 4 to 7 (3 to 5 moist), and chroma of 4 to 6. The calcium carbonate equivalent ranges from 15 to 35 percent in the Bk horizon.

Conger Series

The soils in the Conger series are classified as loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids. These soils are very shallow or shallow to a petrocalcic horizon. They are well drained and formed in calcareous loamy sediments derived mainly from mixed sources. They are on ridges and crests. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Conger loam in an area of Conger-Hilken loams, 0 to 3 percent slopes; about 24 miles east of Santa Rosa, 450 feet south of the northeast corner of section 14, T. 8 N, R. 25 E.

A—0 to 5 inches; brown (7.5YR 4/3) loam, dark brown (7.5YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk—5 to 13 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate

medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine interstitial pores; few fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—13 to 23 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 8 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 or 3. The Bk horizon is loam or sandy clay loam. It has hue of 7.5YR or 10YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 2 to 4. The calcium carbonate equivalent ranges from 10 to 15 percent.

These Conger soils are outside the normal geographic distribution of the series.

Darvey Series

The soils in the Darvey series are classified as fine-loamy, mixed, superactive, mesic Ustic Haplocalcids. These deep, well drained soils formed in eolian materials and slope alluvium derived mainly from sandstone, shale, and limestone. They are on hillslopes. Slope ranges from 0 to 3 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Darvey loam in an area of Harvey-Darvey complex, 1 to 5 percent slopes; about 12 miles south of Vaughn, 2,300 feet west and 1,700 feet north of the southeast corner of section 12, T. 2 N., R. 16 E.

A—0 to 6 inches; brown (7.5YR 4/4) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—6 to 14 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many fine interstitial pores; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bk1—14 to 25 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; few medium and large masses and concretions of calcium carbonate; violently effervescent; moderately alkaline; clear wavy boundary.

Bk2—25 to 60 inches; pink (7.5YR 8/4) loam, pink (7.5YR 7/4) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; very few fine roots; common very fine and fine pores; many large masses and concretions of calcium carbonate; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 24 to 37 inches.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5 dry (3 or 4 moist), and chroma of 2 to 4. The Bw horizon is loam or clay loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6. The Bk horizon is loam, sandy clay loam, or clay loam. It has hue of 5YR or 7.5YR, value of 5 to 8 dry (4 to 7 moist), and chroma of 3 to 5.

Deama Series

The soils in the Deama series are classified as loamy-skeletal, carbonatic, mesic Lithic Calciustolls. These very shallow or shallow, well drained soils formed in cobbly

materials derived mainly from limestone. They are on ridges and hillslopes. Slope ranges from 3 to 25 percent. Elevation ranges from 5,600 to 6,200 feet. The average annual precipitation is 13 to 15 inches. The average annual air temperature is 52 to 54 degrees F. The average annual frost-free period is 130 to 150 days.

Typical pedon of Deama cobbly loam, 3 to 25 percent slopes; 3 miles southeast of Dilia; New Mexico State Plane Coordinates of east 300,000 feet and north 1,514,600 feet:

A—0 to 7 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine pores; 10 percent pebbles and 20 percent cobbles; violently effervescent; moderately alkaline; clear smooth boundary.

Bk1—7 to 14 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; few very fine and fine pores; 20 percent pebbles and 35 percent cobbles; calcium carbonate as coatings and pendants on the underside of coarse fragments; violently effervescent; moderately alkaline; clear smooth boundary.

Bk2—14 to 17 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; weak very fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine pores; 45 percent pebbles and 10 percent cobbles; calcium carbonate as coatings and pendants on the underside of coarse fragments; violently effervescent; moderately alkaline; abrupt smooth boundary.

R—17 to 27 inches; hard limestone bedrock.

Depth to limestone ranges from 6 to 20 inches. The calcium carbonate equivalent ranges from 40 to 50 percent on a weighted average. The content of rock fragments ranges from 35 to 70 percent in the particle-size control section.

The A horizon has value of 3 to 6 dry (2 to 4 moist) and chroma of 2 or 3. The Bk horizon is loam or fine sandy loam in the fine-earth fraction. It has hue of 7.5YR or 10YR, value of 4 to 8 dry (3 to 7 moist), and chroma of 2 to 4.

Dean Series

The soils in the Dean series are classified as fine-loamy, carbonatic, mesic Ustic Haplocalcids. These deep, well drained soils formed in slope alluvium derived mainly from limestone, sandstone, and shale. They are on ridges and shoulder slopes. Slope ranges from 3 to 15 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Dean loam in an area of Harvey-Dean loams, 3 to 15 percent slopes; about 1/2 mile south of the intersection of State Highways 60 and 285, about 2,600 feet south and 2,000 feet east of the northwest corner of section 8, T. 4 N., R. 17 E.

A—0 to 8 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many fine and few medium roots; common very fine and fine tubular and many very fine interstitial pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bk1—8 to 20 inches; pinkish white (5YR 8/2) gravelly sandy loam, pinkish gray (5YR 7/2) moist; weak fine and medium subangular blocky structure; hard, friable, nonsticky and nonplastic; few very fine and fine roots; many fine and medium

interstitial pores; 25 percent pebbles; common medium masses and concretions of calcium carbonate; common moderately thick calcium carbonate coatings on pebbles; violently effervescent; moderately alkaline; clear wavy boundary.

Bk2—20 to 28 inches; pink (5YR 8/3) gravelly sandy loam, pink (5YR 7/3) moist; weak fine and medium subangular blocky structure; hard, friable, nonsticky and nonplastic; few very fine and fine roots; many fine and medium interstitial and common very fine and fine tubular pores; 25 percent pebbles; common medium concretions and coatings of calcium carbonate on pebbles; violently effervescent; moderately alkaline; clear wavy boundary.

Bk3—28 to 41 inches; pinkish white (5YR 8/2) loam, pink (5YR 7/4) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine tubular pores; 15 percent pebbles; many fine to coarse masses of calcium carbonate; violently effervescent; moderately alkaline; clear wavy boundary.

Bk4—41 to 60 inches; pink (7.5YR 7/4) loam, light reddish brown (5YR 6/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; few medium and common fine tubular pores; 5 percent pebbles; common threads of calcium carbonate on faces of peds and lining pores; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 5 to 20 inches. The calcium carbonate equivalent ranges from 40 to about 80 percent. The content of rock fragments ranges from 15 to about 30 percent in the control section and from 5 to 40 percent below a depth of 40 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 7 dry (3 to 5 moist), and chroma of 4 or 5. The Bk horizon is sandy loam or loam in the fine-earth fraction. It has hue of 5YR or 7.5YR, value of 6 to 8 dry (5 to 7 moist), and chroma of 2 to 6.

The Dean soils in Guadalupe County are considered taxadjuncts to the series because they have less clay in the control section than is defined in the range for the series. This difference, however, does not significantly affect use and management.

Flugle Series

The soils in the Flugle series are classified as fine-loamy, mixed, superactive, mesic Aridic Haplustalfs. These deep, well drained soils formed in alluvial and eolian materials derived mainly from mixed sources. They are on hillslopes. Slope ranges from 1 to 7 percent. Elevation ranges from 5,600 to 6,200 feet. The average annual precipitation is 11 to 15 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Flugle fine sandy loam in an area of Tuloso-Flugle association, 1 to 15 percent slopes; about 3½ miles south-southeast of La Loma; New Mexico State Plane Coordinates of east 271,200 feet and north 1,508,000 feet:

A—0 to 6 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; many very fine and fine interstitial pores; neutral; clear smooth boundary.

Bt1—6 to 19 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine interstitial and few fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; clear smooth boundary.

Bt2—19 to 31 inches; yellowish red (5YR 4/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots;

common fine interstitial pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; gradual smooth boundary.

Bk1—31 to 53 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine tubular pores; few fine masses of calcium carbonate; slightly effervescent; moderately alkaline; diffuse smooth boundary.

Bk2—53 to 60 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine roots; common very fine and fine tubular pores; few fine masses of calcium carbonate; slightly effervescent; moderately alkaline.

The A horizon is fine sandy loam or loamy fine sand. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4. The Bt horizon is sandy clay loam or clay loam. It has hue of 5YR or 7.5YR, value of 3 to 6 dry (3 to 5 moist), and chroma of 4 to 6. The Bk horizon has hue of 5YR or 7.5YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 3 to 6.

These Flugle soils are outside the normal distribution for the series.

Gabaldon Series

The soils in the Gabaldon series are classified as fine-silty, mixed, superactive, mesic Cumulic Haplustolls. These deep, well drained soils formed in slope alluvium derived mainly from sandstone, shale, and limestone. They are in swales and depressions. Slope is 0 to 1 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Gabaldon silt loam in an area of Winona-Gabaldon complex, 0 to 15 percent slopes; about 10 miles south of Vaughn, 2,380 feet east and 2,385 feet south of the northwest corner of section 21, T. 2 N, R. 16 E.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium and common coarse roots; common fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

A2—4 to 13 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; common fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw1—13 to 25 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and slightly plastic; few very fine and fine roots; common fine and medium tubular pores; strongly effervescent; moderately alkaline; clear wavy boundary.

Bw2—25 to 31 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bk—31 to 60 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine tubular pores; few fine filaments of calcium carbonate on faces of peds; violently effervescent; moderately alkaline.

The A horizon is silt loam, loam, or silty clay loam. It has hue of 7.5YR or 10YR, value of 3 or 4 dry (2 or 3 moist), and chroma of 2 or 3. The B horizon is silt loam or silty clay loam. It has hue of 7.5YR or 10YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 2 to 4.

Gallen Series

The soils in the Gallen series are classified as loamy-skeletal, mixed, superactive, thermic Ustic Haplocalcids. These deep, well drained soils formed in gravelly alluvium derived mainly from mixed sources. They are on hillslopes and terraces. Slope ranges from 5 to 30 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Gallen very gravelly sandy loam, 5 to 30 percent slopes; about 22 miles southeast of Santa Rosa, 1,580 feet west and 2,080 feet north of the southeast corner of section 11, T. 5 N., R. 23 E.

A—0 to 3 inches; brown (7.5YR 4/4) very gravelly sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many fine tubular pores; 35 percent pebbles; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—3 to 9 inches; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 40 percent pebbles; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk1—9 to 25 inches; pink (7.5YR 7/4) very gravelly sandy loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine roots; common fine interstitial pores; 45 percent pebbles; many coatings on pebbles of calcium carbonate; calcium carbonate engulfed; violently effervescent; moderately alkaline; gradual smooth boundary.

Bk2—25 to 42 inches; light reddish brown (5YR 6/4) very gravelly sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine interstitial pores; 40 percent pebbles; common fine and medium masses and concretions of calcium carbonate; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk3—42 to 60 inches; yellowish red (5YR 5/6) very gravelly sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; 35 percent pebbles; few medium and coarse masses of calcium carbonate; strongly effervescent; moderately alkaline.

The content of gravel ranges from 35 to 60 percent throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 dry (2 to 4 moist), and chroma of 2 to 4. The B horizons are sandy loam or fine sandy loam in the fine-earth fraction. They have hue of 5YR or 7.5YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 2 to 6.

Hagerman Series

The soils in the Hagerman series are classified as fine-loamy, mixed, superactive, mesic Ustic Haplargids. These moderately deep, well drained soils formed in colluvial and eolian materials derived mainly from sandstone and shale. They are on hillslopes and mesas. Slope ranges from 1 to 10 percent. Elevation ranges from 5,600 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 54 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Hagerman loam in an area of Bond-Hagerman complex, 1 to 10 percent slopes; about 8 miles north of Vaughn, 2,000 feet west and 1,450 feet north of the southeast corner of section 23, R. 16 E., T. 6 N.

A—0 to 7 inches; brown (7.5YR 4/4) loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine tubular roots; few very fine and fine pores; slightly alkaline; clear smooth boundary.

Bt—7 to 21 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine tubular roots; few very fine and fine pores; many distinct clay films on faces of peds and lining pores; slightly alkaline; clear smooth boundary.

Btk—21 to 28 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few fine pores; few faint clay films on faces of peds and lining pores; few fine masses of calcium carbonate; strongly effervescent; moderately alkaline; abrupt wavy boundary.

R—28 to 38 inches; hard sandstone bedrock.

The depth to hard bedrock ranges from 20 to 40 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 4 to 6. The Bt horizons are clay loam or sandy clay loam. They have hue of 5YR or 7.5YR, value of 5 or 6 dry (4 or 5 moist), and chroma of 3 or 4.

Harvey Series

The soils in the Harvey series are classified as coarse-loamy, mixed, superactive, mesic Ustic Haplocalcids. These deep, well drained soils formed in eolian and alluvial materials derived mainly from sandstone, shale, and limestone. They are on hillslopes and knolls. Slope ranges from 0 to 15 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Harvey loam in an area of Harvey-Dean loams, 3 to 15 percent slopes; about 2 miles east-southeast of Vaughn, 700 feet east, 1,200 feet south of the northwest corner of section 9, T. 4 N., R. 17 E.

A—0 to 10 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to weak medium granular; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine tubular and interstitial pores; common fine and medium concretions of calcium carbonate; strongly effervescent; slightly alkaline; abrupt wavy boundary.

Bk1—10 to 22 inches; pink (5YR 7/4) loam, light reddish brown (5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine and medium tubular pores; 5 percent igneous and caliche pebbles; few fine and medium concretions of calcium carbonate; violently effervescent; moderately alkaline; clear wavy boundary.

Bk2—22 to 38 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; many fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—38 to 60 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common medium tubular pores; 10 percent caliche and igneous pebbles; common fine and medium masses and common thin filaments and threads of calcium carbonate; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 5 to 20 inches. The calcium carbonate equivalent ranges from 15 to 40 percent in the calcic horizon.

The A horizon is very fine sandy loam, fine sandy loam, or loam. It has hue of 5YR or 7.5YR, value of 5 or 6 dry (3 to 5 moist), and chroma of 3 or 4. The Bk horizon is loam, clay loam, or sandy clay loam. It has hue of 5YR or 7.5YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 4 to 6.

Hassell Series

The soils in the Hassell series are classified as fine, smectitic, thermic Ustertic Haplargids. These moderately deep, well drained soils formed in slope alluvium and residuum derived mainly from red bed shale. They are on backslopes and toeslopes. Slope ranges from 0 to 5 percent. Elevation ranges from 4,000 to 5,300 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Hassell clay loam in an area of Tucumcari-Hassell clay loams, 0 to 5 percent slopes; about 10 miles west of Ima, 2,000 feet east and 1,900 feet south of the northwest corner of section 9, T. 7 N., R. 26 E.

A—0 to 4 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and plastic; common fine roots; many very fine pores; moderately alkaline; clear smooth boundary.

Bt1—4 to 7 inches; reddish brown (5YR 5/3) silty clay, reddish brown (5YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common fine roots; many very fine pores; few faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—7 to 22 inches; reddish brown (5YR 5/3) silty clay, reddish brown (5YR 4/3) moist; weak coarse prismatic structure parting to moderate fine and medium angular and subangular blocky; very hard, firm, very sticky and plastic; common fine roots mostly between peds; few very fine pores; common distinct clay films on faces of peds; slightly effervescent; moderately alkaline; gradual smooth boundary.

Btk—22 to 26 inches; reddish brown (2.5YR 5/4) clay, reddish brown (2.5YR 4/4) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and plastic; few fine roots; few very fine pores; few faint clay films on faces of peds; few fine masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

By—26 to 32 inches; reddish brown (2.5YR 5/4) clay, reddish brown (2.5YR 4/4) moist; weak coarse subangular blocky structure; very hard, firm, very sticky and plastic; few fine roots; few very fine pores; few small gypsum crystals in the lower part of horizon; moderately alkaline; gradual smooth boundary.

Cr—32 to 44 inches; reddish brown clayey weathered shale; structure is that of shale with pronounced horizontal bedding planes; few fine roots in the bedding planes in the upper few inches of horizon; slightly effervescent; few fine masses of calcium carbonate which decrease in number as depth increases.

R—44 to 54 inches; reddish brown hard shale bedrock.

The depth to weathered shale ranges from 20 to 40 inches.

The A horizon has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6. The B horizons are clay loam, silty clay, or clay. They have hue of 2.5YR or 5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6.

Hilken Series

The soils in the Hilken series are classified as fine-loamy, mixed, superactive, thermic Ustalfic Petrocalcids. These soils are moderately deep to a petrocalcic horizon. They are well drained and formed in eolian and alluvial material derived mainly from mixed sources. They are on footslopes, toeslopes, and ridges. Slope ranges from 0 to 2 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Hilken fine sandy loam in an area of Hilken-Palo fine sandy loams, 0 to 2 percent slopes; about 22 miles south-southeast of Santa Rosa, 550 feet south and 300 feet west of the northeast corner of section 20, T. 5 N., R. 23 E.

A—0 to 3 inches; brown (7.5YR 5/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; slightly alkaline; clear smooth boundary.

Bt1—3 to 16 inches; yellowish red (5YR 4/6) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; gradual smooth boundary.

Bt2—16 to 21 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; moderately alkaline; clear smooth boundary.

Bk—21 to 27 inches; yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; 50 percent angular caliche pebbles; few fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—27 to 37 inches; indurated caliche.

Depth to indurated petrocalcic material ranges from 20 to 40 inches.

The A horizon is fine sandy loam or loam. It has hue of 5YR or 7.5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 3 or 4. The Bt horizon is loam, sandy clay loam, or clay loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 4 to 6. The Bk horizon is fine sandy loam, loam, or sandy clay loam and has 15 to 60 percent rock fragments. It has value of 5 or 6 dry (4 or 5 moist) and chroma of 4 to 6.

Hollomex Series

The soils in the Hollomex series are classified as fine-loamy, gypsic, thermic Typic Torriorthents. These deep, well drained soils formed in loamy sediments derived mainly from gypsiferous materials. They are on hillslopes. Slope ranges from 3 to 10 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation

is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Hollomex loam in an area of Hollomex-Reeves complex, 1 to 10 percent slopes; about 14 miles south of Santa Rosa, 520 feet south and 1,280 feet east of the northwest corner of section 18, T. 6 N., R. 22 E.

A—0 to 2 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/2) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; few medium and common fine gypsum masses on the underside of plates; strongly effervescent; moderately alkaline; clear wavy boundary.

Cy1—2 to 7 inches; very pale brown (10YR 8/2) gypsiferous silt loam, light gray (10YR 7/2) moist; moderate medium and thick platy structure; hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine tubular pores; gypsum engulfed; strongly effervescent; slightly alkaline; clear wavy boundary.

Cy2—7 to 32 inches; light gray (10YR 7/1) gypsiferous silt loam, light brownish gray (10YR 6/2) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine tubular pores; gypsum engulfed; violently effervescent; slightly alkaline; gradual wavy boundary.

Cy3—32 to 56 inches; gray (10YR 6/1) gypsiferous loam, gray (10YR 5/1) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common medium gypsum masses; slightly effervescent; neutral; gradual wavy boundary.

Cy4—56 to 60 inches; very pale brown (10YR 8/2) gypsiferous silt loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine masses of gypsum; neutral.

Depth to gypsiferous materials ranges from 2 to 10 inches. The gypsum content is greater than 40 percent. The apparent texture is loam, silt loam, sandy clay loam, or clay loam.

The A horizon has hue of 5YR or 7.5YR, value of 4 to 7 dry (3 to 5 moist), and chroma of 1 to 4. The Cy horizon has hue of 7.5YR to 2.5Y, value of 6 to 8 dry (4 to 7 moist), and chroma of 1 to 6.

Ima Series

The soils in the Ima series are classified as coarse-loamy, mixed, superactive, thermic Ustic Haplocambids. These deep, well drained soils formed in slope alluvium derived mainly from red bed sandstone and shale. They are on hillslopes, ridges, and terraces. Slope ranges from 0 to 10 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Ima fine sandy loam in an area of Ima-La Lande fine sandy loams, 2 to 10 percent slopes; about 10 miles northeast of Cuervo, 2,500 feet north and 1,200 feet west of the southeast corner of section 30, T. 11 N., R. 25 E.

A—0 to 4 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure with weak thin platy structure in the upper 1 inch; soft, very friable, nonsticky and nonplastic; many fine and medium roots; common very fine and fine and few coarse tubular pores; slightly effervescent; slightly alkaline; clear wavy boundary.

Bw—4 to 22 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; common very fine

and fine roots; common fine and medium tubular pores; slightly effervescent; moderately alkaline; gradual wavy boundary.

Bk1—22 to 41 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many fine tubular pores; few fine filaments of calcium carbonate on faces of peds; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk2—41 to 60 inches; strong brown (7.5YR 5/6) loam, strong brown (7.5YR 4/6) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; few very fine and fine tubular pores; few fine filaments and few fine masses of calcium carbonate; strongly effervescent; moderately alkaline.

The A horizon is fine sandy loam or sandy loam. It has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 or 4. The B horizon and the C horizon, if it occurs, are fine sandy loam, sandy loam, or loam. They have hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 4 to 6.

Karde Series

The soils in the Karde series are classified as fine-silty, carbonatic, mesic Ustic Torriorthents. These deep, well drained soils formed in eolian materials derived mainly from lacustrine sediments. They are on leeward dunes of playa lakes. Slope ranges from 3 to 10 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Karde loam, 3 to 10 percent slopes; about 17 miles east of Santa Rosa, 2,400 feet north of the southeast corner of section 34, T. 9 N., R. 24 E.

A—0 to 9 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure parting to weak medium granular; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; many fine tubular and common fine interstitial pores; violently effervescent; moderately alkaline; gradual smooth boundary.

AC—9 to 19 inches; light brownish gray (10YR 6/2) clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, sticky and plastic; common fine and medium roots; few very fine tubular and common very fine and fine interstitial pores; violently effervescent; moderately alkaline; clear smooth boundary.

C1—19 to 33 inches; light gray (5Y 7/2) silty clay loam, pale olive (5Y 6/3) moist; massive; slightly hard, firm, sticky and plastic; common fine roots; few very fine tubular and many very fine interstitial pores; violently effervescent; moderately alkaline; clear smooth boundary.

C2—33 to 60 inches; pale yellow (5Y 8/2) clay loam, light olive gray (5Y 6/2) moist; massive; hard, friable, sticky and plastic; few fine roots; common fine tubular and interstitial pores; violently effervescent; strongly alkaline.

The A and AC horizons are loam or clay loam. They have hue of 10YR or 2.5Y, value of 5 to 7 dry (4 to 6 moist), and chroma of 2 to 4. The C horizon is loam, silty clay loam, or clay loam. It has hue of 2.5Y or 5Y, value of 6 to 8 dry (5 to 7 moist), and chroma of 1 to 4.

The Karde soils in Guadalupe County are considered taxadjuncts to the series because they are warmer and occur at lower elevations than what is defined in the range for the series. These differences, however, do not significantly affect use and management.

Kolar Series

The soils in the Kolar series are classified as loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids. These soils are very shallow or shallow to a petrocalcic horizon. They are well drained and formed in eolian materials and slope alluvium derived from mixed sources. They are on mesas and plateaus. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Kolar fine sandy loam in an area of Kolar-Neso association, 0 to 5 percent slopes; about 20 miles south of Santa Rosa, 2,350 feet west and 50 feet north of the southeast corner of section 16, T. 5 N., R. 22 E.

A—0 to 5 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; many fine and few very fine interstitial pores; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk—5 to 10 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few very fine and fine tubular pores; 10 percent caliche pebbles; common medium and large masses of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—10 to 20 inches; indurated caliche.

Depth to indurated petrocalcic material ranges from 9 to 20 inches.

The A horizon is fine sandy loam or very fine sandy loam. It has hue of 7.5YR or 10YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 3 or 4. The Bk horizon is fine sandy loam or sandy loam. It has hue of 5YR or 7.5YR, value of 5 to 8 dry (4 to 6 moist), and chroma of 2 to 4.

Lacoca Series

The soils in the Lacoca series are classified as loamy, mixed, superactive, calcareous, thermic Lithic Ustic Torriorthents. These very shallow or shallow, well drained soils formed in slope alluvium, colluvium, and eolian material derived mainly from red bed sandstone. They are on hillslopes, ledges, and escarpments. Slope ranges from 1 to 50 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Lacoca fine sandy loam in an area of San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes; about 7 miles north of Santa Rosa, in the Preston Beck Land Grant; New State Plane Coordinates of north 1,474,340 feet and east 404,500 feet:

A—0 to 8 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak fine and medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine interstitial pores; 5 percent pebbles; strongly effervescent; moderately alkaline; abrupt wavy boundary.

R—8 to 18 inches; hard sandstone bedrock with a surface coated with calcium carbonate.

The depth to hard sandstone bedrock ranges from 4 to 20 inches.

The A horizon is fine sandy loam or sandy loam and has 5 to 15 percent gravel. It has hue of 2.5YR to 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 6.

La Fonda Series

The soils in the La Fonda series are classified as fine-loamy, mixed, superactive, mesic Ustic Haplocambids. These deep, well drained soils formed in eolian material and slope alluvium derived mainly from sandstone, shale, and limestone. They are on hillslopes. Slope ranges from 5 to 15 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of La Fonda fine sandy loam in an area of La Fonda-Palma fine sandy loams, 5 to 15 percent slopes; about 11 miles north of Vaughn; 1,400 feet west and 200 feet south of the northeast corner of section 11, T. 6 N., R. 16 E.

A—0 to 11 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and many fine roots; few fine pores; slightly alkaline; clear smooth boundary.

Bw—11 to 20 inches; brown (7.5YR 4/4) sandy loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few medium and common fine roots; few fine pores; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk1—20 to 38 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine roots; few fine pores; slightly effervescent; moderately alkaline; gradual smooth boundary.

Bk2—38 to 48 inches; brown (7.5YR 4/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine roots; few fine pores; few fine masses of calcium carbonate; slightly effervescent; moderately alkaline; gradual smooth boundary.

Bk3—48 to 60 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine pores; common very fine masses of calcium carbonate; strongly effervescent; moderately alkaline.

The A horizon is fine sandy loam or loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 3 or 4. The Bw and Bk horizons are sandy loam, sandy clay loam, or loam. They have hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6.

La Lande Series

The soils in the La Lande series are classified as fine-loamy, mixed, superactive, thermic Ustic Haplocambids. These deep, well drained soils formed in loamy slope alluvium derived mainly from red bed sandstone and shale. They are on hillslopes, fans, and terraces. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of La Lande loam in an area of La Lande-Chispa complex, 3 to 15 percent slopes; about 31 miles east of Santa Rosa, 500 feet south and 30 feet west of the northeast corner of section 11, T. 8 N., R. 26 E.

A—0 to 4 inches; reddish brown (5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; weak fine granular and weak fine subangular blocky structure; slightly hard, very

friable, slightly sticky and slightly plastic; many fine roots; many very fine pores; slightly alkaline; clear smooth boundary.

Bw1—4 to 9 inches; reddish brown (5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine and fine pores; few clusters of fine wormcasts; slightly alkaline; gradual smooth boundary.

Bw2—9 to 17 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine and fine pores; common clusters of fine wormcasts; few fine pebbles; few fine masses of calcium carbonate and few thin calcium carbonate coatings on underside of pebbles; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk1—17 to 24 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots; many very fine and few fine pores; few clusters of fine wormcasts; few fine pebbles; common fine and medium calcium carbonate masses and thin coatings on all sides of pebbles; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk2—24 to 60 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine pores; few fine pebbles; common fine and medium calcium carbonate masses and thin coatings on pebbles; the amount of calcium carbonate decreases as depth increases; strongly effervescent; moderately alkaline.

The A horizon is fine sandy loam or loam. It has hue of 2.5YR to 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 4 to 6. The B horizons are loam, sandy clay loam, or clay loam. They have hue of 2.5YR to 7.5YR, value of 3 to 7 dry (3 to 5 moist), and chroma of 4 to 6.

Manzano Series

The soils in the Manzano series are classified as fine-loamy, mixed, superactive, mesic Cumulic Haplustolls. These deep, well drained soils formed in loamy alluvium derived mainly from sandstone, shale, and limestone. They are on terraces and in swales along valley floors. Slope ranges from 0 to 2 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Manzano loam, 0 to 2 percent slopes, rarely flooded; about 13 miles north of Vaughn, 550 feet west and 450 feet north of the southeast corner of section 27, T. 7 N., R. 16 E.

A—0 to 11 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine and medium roots; many fine and medium tubular and common fine interstitial pores; neutral; clear smooth boundary.

Bw—11 to 21 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; many fine and medium tubular and common medium interstitial pores; slightly alkaline; gradual smooth boundary.

Bk—21 to 41 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; weak coarse prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and plastic; common fine and medium roots; common

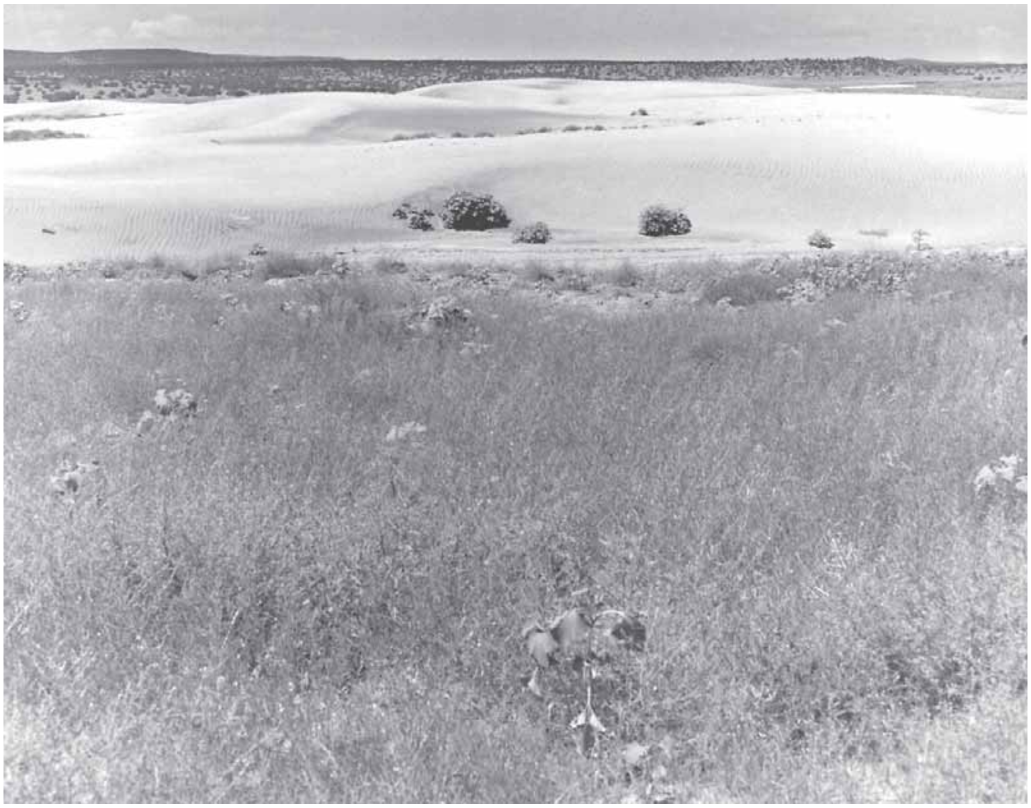

Figure 20.—Mido loamy fine sand, 1 to 10 percent slopes, in the foreground. Active sand dunes (in the background) are inclusions in areas of this soil.

fine and medium tubular pores; few fine masses of calcium carbonate; slightly effervescent; slightly alkaline; clear smooth boundary.

Akb—41 to 60 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure parting to weak fine angular blocky; slightly hard, very friable, sticky and plastic; few fine and medium roots; few very fine and fine tubular pores; few fine threads of calcium carbonate; strongly effervescent; moderately alkaline.

The mollic epipedon ranges from 20 to 37 inches in thickness. Some pedons do not have buried A horizons.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 dry (2 or 3 moist), and chroma of 2 or 3. The B horizons are loam, sandy clay loam, or clay loam. They have hue of 5YR or 7.5YR, value of 4 to 6 dry (2 to 4 moist), and chroma of 2 to 4.

Mido Series

The soils in the Mido series are classified as mixed, mesic Ustic Torripsamments. These deep, excessively drained soils formed in eolian modified alluvial materials derived mainly from mixed sources. They are on hillslopes and terraces. Slope ranges from 0 to 10 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Mido loamy fine sand, 1 to 10 percent slopes (fig. 20); about 3

miles south of Santa Rosa, 2,900 feet east and 1,100 feet south of the northwest corner of section 26, T. 8 N., R. 21 E.

A—0 to 11 inches; reddish brown (5YR 5/4) loamy fine sand, reddish brown (5YR 4/4) moist; weak medium granular structure; loose, nonsticky and nonplastic; common very fine and fine roots; common fine interstitial pores; slightly effervescent; moderately alkaline; clear smooth boundary.

C1—11 to 20 inches; reddish brown (5YR 5/4) loamy fine sand, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; slightly effervescent; moderately alkaline; gradual smooth boundary.

C2—20 to 60 inches; light reddish brown (5YR 6/4) loamy fine sand, reddish brown (5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; strongly effervescent; moderately alkaline.

The A and C horizons have hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6.

Minneosa Series

The soils in the Minneosa series are classified as sandy, mixed, thermic Ustic Torrifluvents. These deep, well drained soils formed in alluvium derived mainly from red bed sandstone and shale. They are on low terraces of major drainages. Slope ranges from 0 to 2 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Minneosa very fine sandy loam, 0 to 2 percent slopes; about 1/2 mile south of Puerto de Luna, 1,000 feet west and 1,400 feet north of the southeast corner of section 17, T. 7 N., R. 22 E.

A—0 to 8 inches; light brown (7.5YR 6/4) very fine sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine and fine roots; few very fine pores; slightly effervescent; moderately alkaline; abrupt wavy boundary.

C1—8 to 15 inches; light brown (7.5YR 6/4) stratified sand and very fine sandy loam, brown (7.5YR 4/4) moist; massive; loose, nonsticky and nonplastic; few very fine and fine roots; few very fine pores; slightly effervescent; moderately alkaline; clear wavy boundary.

C2—15 to 19 inches; brown (7.5YR 5/4) very fine sandy loam that has thin strata of fine sandy loam, strong brown (7.5YR 4/6) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; few very fine tubular pores; slightly effervescent; moderately alkaline; abrupt wavy boundary.

C3—19 to 35 inches; pink (7.5YR 7/4) loamy sand, brown (7.5YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; few very fine pores; strongly effervescent; moderately alkaline; gradual wavy boundary.

C4—35 to 60 inches; pink (7.5YR 7/4) sand, light brown (7.5YR 6/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; few very fine pores; moderately alkaline.

The A horizon has hue of 5YR or 7.5YR, value of 5 or 6 dry (3 to 5 moist), and chroma of 3 or 4. The C horizon is sand or loamy sand that has thin strata of fine sandy loam, very fine sandy loam, or silt loam. It has hue of 5YR or 7.5YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 3 to 5.

Figure 21.—Montoya silty clay loam in an area of Tucumcari-Montoya complex, 0 to 3 percent slopes. Gilgai microrelief is well expressed on the Montoya soil.

Montoya Series

The soils in the Montoya series are classified as fine, smectitic, thermic Chromic Haplotorrerts. These deep, well drained soils formed in fine textured slope alluvium derived mainly from red bed sandstone and shale. They are on basin floors. Slope ranges from 0 to 2 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Montoya silty clay loam in an area of Tucumcari-Montoya complex, 0 to 3 percent slopes (fig. 21); about 23 miles southeast of Santa Rosa, 2,500 feet east and 250 feet north of the southwest corner of section 31, T. 7 N., R. 25 E.

A—0 to 9 inches; reddish brown (5YR 4/4) silty clay loam, dark reddish brown (5YR 3/3) moist; weak medium platy structure in the surface and moderate and strong fine granular structure below the surface; soft, very friable, sticky and plastic; many very fine and fine and common medium roots; many fine tubular pores; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bss1—9 to 21 inches; yellowish red (5YR 4/6) clay loam, dark reddish brown (5YR 3/4) moist; strong coarse and medium subangular blocky structure; hard, friable, very sticky and very plastic; many very fine and fine roots; many fine tubular pores; few cracks 1/2 to 1 inch wide; few distinct slickensides; slightly effervescent; slightly alkaline; clear wavy boundary.

Bss2—21 to 35 inches; yellowish red (5YR 4/6) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky

and very plastic; common very fine and fine roots; common fine and medium tubular pores; few cracks 1/2 inch wide; few distinct slickensides; slightly effervescent; slightly alkaline; clear wavy boundary.

Bss3—35 to 47 inches; yellowish red (5YR 5/6) clay, yellowish red (5YR 4/6) moist; moderate fine angular and subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; few faint slickensides; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2C—47 to 60 inches; yellowish red (5YR 5/6) clay loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; violently effervescent; slightly alkaline.

The soil has cracks more than 1 centimeter wide at depths of 20 inches or more, and the cracks remain open most of the year.

The A horizon has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 to 4 moist), and chroma of 3 to 6. It is clay loam or silty clay loam. The Bss horizon has hue of 2.5YR or 5YR, value of 3 to 6 dry (3 to 5 moist), and chroma of 3 to 6. It is clay loam, silty clay, or clay. The 2C horizon has colors similar to those of the Bss horizon. It is clay loam or silty clay loam.

Neso Series

The soils in the Neso series are classified as loamy-skeletal, carbonatic, thermic, shallow Calcic Petrocalcids. These soils are very shallow or shallow to a petrocalcic horizon. They are well drained and formed in loamy calcareous eolian materials and slope alluvium derived mainly from mixed sources. They are on mesas and ridges. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Neso gravelly fine sandy loam in an area of Kolar-Neso association, 0 to 5 percent slopes; about 22 miles south-southeast of Santa Rosa, 950 feet west and 350 feet north of the southeast corner of section 2, T. 5 N., R. 22 E.

A—0 to 4 inches; brown (7.5YR 5/4) gravelly fine sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; few fine tubular pores; 20 percent caliche pebbles; violently effervescent; moderately alkaline; clear wavy boundary.

Bk—4 to 12 inches; brown (7.5YR 5/4) very gravelly fine sandy loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; common fine and medium interstitial and few fine tubular pores; 45 percent caliche pebbles; common fine concretions of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—12 to 22 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 8 to 14 inches.

The A horizon is gravelly fine sandy loam or very gravelly loamy fine sand. It has hue of 7.5YR or 10YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 3 or 4. The B horizon is very gravelly fine sandy loam, very cobbly fine sandy loam, or extremely cobbly sandy loam. It has hue of 7.5YR or 10YR, value of 5 or 6 dry (4 or 5 moist), and chroma of 3 or 4.

Newkirk Series

The soils in the Newkirk series are classified as loamy, mixed, superactive, thermic Lithic Ustic Haplargids. These very shallow or shallow, well drained soils formed in

slope alluvium and residuum derived mainly from red bed sandstone. They are on ridges and hillslopes. Slope ranges from 1 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Newkirk fine sandy loam in an area of Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes; about 7 miles north of Santa Rosa; New Mexico State Plane Coordinates of east 389,300 feet and north 1,466,000 feet:

A—0 to 3 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine interstitial pores; 10 percent cobbles and pebbles; slightly alkaline; clear smooth boundary.

Bt—3 to 16 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine tubular pores; few distinct clay films on faces of peds; 5 percent cobbles; slightly alkaline; abrupt wavy boundary.

R—16 to 26 inches; hard sandstone bedrock.

The depth to hard sandstone bedrock ranges from 8 to 20 inches.

The A horizon is fine sandy loam or sandy loam. It has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 to 4 moist), and chroma of 2 to 4. The Bt horizon is sandy loam or sandy clay loam. It has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 to 4 moist), and chroma of 2 to 4.

Palma Series

The soils in the Palma series are classified as coarse-loamy, mixed, superactive, mesic Ustic Calciargids. These deep, well drained soils formed in eolian materials and slope alluvium derived from sandstone and limestone. They are on hillslopes and terraces. Slope ranges from 0 to 5 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Palma loamy fine sand in an area of Cardenas-Palma loamy fine sands, 0 to 3 percent slopes; about 18 miles southeast of Vaughn, 1,300 feet west and 25 feet north of the southeast corner of section 28, T. 2 N., R. 18 E.

A—0 to 5 inches; brown (7.5YR 4/4) loamy fine sand, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; common fine interstitial pores; neutral; clear smooth boundary.

Bt1—5 to 11 inches; strong brown (7.5YR 4/6) fine sandy loam, dark brown (7.5YR 3/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many fine and common medium tubular pores; few distinct clay films on faces of peds; many clay bridges on sand grains; slightly alkaline; clear wavy boundary.

Bt2—11 to 21 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine tubular pores; few distinct clay films on faces of peds; many clay bridges on sand grains; slightly alkaline; clear wavy boundary.

Bk1—21 to 34 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable,

nonsticky and nonplastic; few fine roots; common fine and medium tubular pores; few fine filaments and threads of calcium carbonate on faces of peds; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bk2—34 to 40 inches; pinkish white (7.5YR 8/2) fine sandy loam, pink (7.5YR 8/4) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and nonplastic; moderate fine and medium tubular pores; common medium and large slightly hard masses of calcium carbonate; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—40 to 60 inches; pink (7.5YR 8/4) sandy loam, pink (7.5YR 7/4) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and nonplastic; calcium carbonate engulfed; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 10 to 38 inches.

The A horizon is loamy fine sand or fine sandy loam. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 6. The Bt horizon is fine sandy loam or sandy loam. It has hue of 2.5YR to 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 4 to 6. The Bk horizon is loamy fine sand, fine sandy loam, or sandy loam. It has hue of 2.5YR to 7.5YR, value of 4 to 8 dry (3 to 7 moist), and chroma of 2 to 6.

Palo Series

The soils in the Palo series are classified as loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids. These soils are very shallow or shallow to a petrocalcic horizon. They are well drained and formed in slope alluvium derived mainly from mixed sources. They are on hillslopes and swales on mesas. Slope ranges from 0 to 2 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 57 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Palo fine sandy loam in an area of Hilken-Palo fine sandy loams, 0 to 2 percent slopes; about 23 miles southeast of Santa Rosa, 1,200 feet south and 200 feet west of the northeast corner of section 20, T. 5 N, R. 23 E.

A—0 to 4 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine interstitial and tubular pores; slightly alkaline; clear smooth boundary.

Bt1—4 to 11 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial and tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; clear smooth boundary.

Bt2—11 to 16 inches; reddish brown (5YR 4/4) gravelly sandy clay loam, dark reddish brown (5YR 3/4) moist; strong fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial pores; many wormcasts; few thin clay films on faces of peds and lining pores; 20 percent caliche pebbles; few fine filaments of calcium carbonate; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—16 to 26 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 9 to 20 inches.

The A horizon has value of 4 or 5 dry (3 or 4 moist). The Bt horizons are gravelly sandy clay loam, sandy clay loam, or clay loam. They have hue of 2.5YR or 5YR and value of 4 or 5 dry (3 or 4 moist). The Bt2 horizon has 15 to 35 percent coarse fragments.

Pastura Series

The soils in the Pastura series are classified as loamy, mixed, superactive, mesic, shallow Ustic Petrocalcids. These soils are very shallow or shallow to a petrocalcic horizon. They are well drained and formed from sediments derived mainly from sedimentary sources mixed with eolian materials. They are on ridges, mesas, and hillslopes. Slope ranges from 0 to 8 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Pastura loam in an area of Pastura-Harvey association, 0 to 8 percent slopes; about 20 miles southwest of Santa Rosa, 100 feet east of the southwest corner of section 3, T. 5 N., R. 19 E.

A—0 to 4 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; common fine tubular and interstitial pores; violently effervescent; moderately alkaline; clear smooth boundary.

Bk—4 to 14 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and few medium roots; common fine tubular and interstitial pores; 10 percent caliche pebbles; few medium and large concretions and masses of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

Bkm—14 to 24 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 5 to 20 inches.

The A horizon is fine sandy loam, loam, or gravelly fine sandy loam. It has hue of 5YR or 7.5YR, value of 4 to 7 dry (3 to 5 moist), and chroma of 2 to 6. The Bk horizon is loam or gravelly loam. It has hue of 5YR to 10YR, value of 4 to 7 dry (4 to 6 moist), and chroma of 2 to 6.

Pojo Series

The soils in the Pojo series are classified as coarse-loamy, mixed, superactive, thermic Ustalfic Petrocalcids. These soils are moderately deep to a petrocalcic horizon. They are well drained and formed in eolian materials and slope alluvium derived mainly from mixed sources. They are on hillslopes. Slope ranges from 0 to 3 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Pojo loamy fine sand in an area of Pojo-Neso-Berwolf association, 0 to 3 percent slopes; about 22 miles south-southeast of Santa Rosa, 1,500 feet west and 750 feet south of the northeast corner of section 18, T. 5 N., R. 23 E.

A—0 to 6 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral; gradual smooth boundary.

Bt1—6 to 11 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; many very fine and fine interstitial and few very fine tubular pores; few faint clay films on faces of peds and bridging sand grains; neutral; gradual smooth boundary.

Bt2—11 to 21 inches; reddish brown (5YR 4/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial and few fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; abrupt smooth boundary.

Bkm—21 to 31 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 20 to 40 inches.

The A horizon has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6. The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 4 to 8.

Redona Series

The soils in the Redona series are classified as fine-loamy, mixed, superactive, thermic Ustic Calciargids. These deep, well drained soils formed in slope alluvium and eolian materials derived mainly from red bed sandstone and shale. They are on hillslopes and in swales. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Redona fine sandy loam in an area of Redona-Berwolf fine sandy loams, 1 to 5 percent slopes; about 21 miles south of Santa Rosa, 1,500 feet south and 1,500 feet east of the northwest corner of section 24, T. 5 N., R. 21 E.

A—0 to 7 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many fine interstitial pores; slightly alkaline; abrupt smooth boundary.

Bt1—7 to 17 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, very friable, sticky and plastic; many very fine and fine and few medium roots; common fine interstitial and tubular pores; few faint clay films on faces of peds; slightly alkaline; abrupt smooth boundary.

Bt2—17 to 23 inches; strong brown (7.5YR 4/6) sandy clay loam, brown (7.5YR 4/4) moist; weak medium prismatic structure parting to weak fine subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine roots; many fine tubular and interstitial pores; common distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

Btk—23 to 37 inches; strong brown (7.5YR 4/6) sandy clay loam, brown (7.5YR 4/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; common fine interstitial and few fine tubular pores; few faint clay films on faces of peds and lining pores; few medium masses of calcium carbonate; slightly effervescent; moderately alkaline; abrupt wavy boundary.

Bk—37 to 60 inches; pinkish white (7.5YR 8/2) sandy clay loam, pinkish gray (7.5YR 6/2) moist; weak medium subangular blocky structure; very hard, very firm, slightly sticky and nonplastic; many medium masses of calcium carbonate; violently effervescent; moderately alkaline.

Depth to the calcic horizon ranges from 20 to 40 inches.

The A horizon is fine sandy loam or loam. It has hue of 5YR or 7.5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 3 to 5. The Bt horizon is loam, sandy clay loam, or clay loam. It has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 to 4 moist), and chroma of 3 to 6. The Bk horizon is loam, sandy clay loam, or clay loam. It has hue of 5YR or

7.5YR, value of 5 to 8 dry (4 to 7 moist), and chroma of 2 to 6. The calcium carbonate equivalent ranges from 15 to 35 percent.

Reeves Series

The soils in the Reeves series are classified as fine-loamy, gypsic, thermic Ustic Calcigypsids. These deep, well drained soils formed in slope alluvium and residuum derived mainly from gypsiferous sources. They are on hillslopes. Slope ranges from 1 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Reeves fine sandy loam in an area of Hollomex-Reeves complex, 1 to 10 percent slopes; about 16 miles south of Santa Rosa, 750 feet east and 1,300 feet north of the southwest corner of section 7, T. 6 N., R. 22 E.

A—0 to 3 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few coarse roots; common very fine and fine tubular pores; moderately alkaline; gradual wavy boundary.

Bw1—3 to 12 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; moderately alkaline; gradual wavy boundary.

Bw2—12 to 24 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; strongly effervescent; slightly alkaline; clear wavy boundary.

Bky—24 to 32 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; common fine masses of calcium carbonate and gypsum; violently effervescent; slightly alkaline; clear smooth boundary.

By1—32 to 43 inches; very pale brown (10YR 8/2) gypsiferous silt loam, very pale brown (10YR 8/2) moist; massive; hard, friable, slightly sticky and slightly plastic; gypsum engulfed; violently effervescent; slightly alkaline; gradual wavy boundary.

By2—43 to 50 inches; very pale brown (10YR 8/2) gypsiferous silt loam, light gray (10YR 7/2) moist; common medium distinct light brown (7.5YR 6/4) mottles; massive; hard, friable, slightly sticky and slightly plastic; gypsum engulfed; violently effervescent; slightly alkaline; gradual wavy boundary.

By3—50 to 60 inches; pink (7.5YR 7/4) gypsiferous very fine sandy loam, brown (7.5YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many fine masses of gypsum; violently effervescent; slightly alkaline.

Depth to the By horizons (gypsiferous materials) ranges from 20 to 40 inches. The content of gypsum ranges from 40 to 80 percent.

The A horizon is fine sandy loam or loam. It has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4. The Bw and Bky horizons are loam or silt loam. They have hue of 5YR to 10YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 3 to 5. The By horizon has apparent texture of gypsiferous very fine sandy loam, silt loam, or loam.

Regnier Series

The soils in the Regnier series are classified as loamy, mixed, superactive, calcareous, thermic, shallow Ustic Torriorthents. These shallow, well drained soils

formed in colluvium, residuum, and slope alluvium derived mainly from red bed shale and sandstone. They are on hillslopes. Slope ranges from 0 to 80 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Regnier loam in an area of Regnier-Lacoca-Rock outcrop complex, 3 to 25 percent slopes; about 21 miles east of Santa Rosa, 800 feet south and 1,500 feet east of the northwest corner of section 30, T. 9 N., R. 25 E.

A1—0 to 3 inches; reddish brown (2.5YR 4/4) loam, dark reddish brown (2.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; violently effervescent; moderately alkaline; clear smooth boundary.

A2—3 to 8 inches; reddish brown (2.5YR 4/4) clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent; moderately alkaline; clear wavy boundary.

BCk—8 to 12 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine pores; 10 percent soft shale fragments with rock structure; common filaments, threads, and thin patchy coatings of calcium carbonate on surfaces of shale fragments; violently effervescent; moderately alkaline; clear wavy boundary.

Cr—12 to 22 inches; weathered shale bedrock.

The depth to weathered shale ranges from 12 to 20 inches.

The A horizon is loam or clay loam. It has hue of 2.5YR or 5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 2 to 8. The BCk or C horizon is silt loam or clay loam. It has hue of 2.5YR or 5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 3 to 8.

Rune Series

The soils in the Rune series are classified as fine, mixed, superactive, mesic Cumulic Haplustolls. These deep, well drained soils formed in fine textured alluvium derived mainly from sandstone, shale, and limestone. They are on terraces of the Pecos River. Slope is 0 to 1 percent. Elevation ranges from 5,100 to 5,300 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Rune clay loam, 0 to 1 percent slopes; about 1 mile southeast of Anton Chico, 800 feet east and 1,300 feet south of the NM 386 bridge over the Pecos River near Anton Chico:

Ap1—0 to 11 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine and few medium roots; common very fine and fine tubular pores and few very fine and fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Ap2—11 to 19 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine interstitial and tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

BC1—19 to 45 inches; dark reddish gray (5YR 4/2) clay, dark reddish brown (5YR 3/2) moist; weak medium subangular blocky and weak medium angular blocky

structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular and few very fine and fine interstitial pores; slightly effervescent; slightly alkaline; gradual smooth boundary.

BC2—45 to 60 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine interstitial pores; strongly effervescent; moderately alkaline.

The A horizon has hue of 2.5YR or 5YR, value of 4 or 5 dry (2 or 3 moist), and chroma of 2 or 3. The BC horizon is clay loam or clay. It has hue of 2.5YR or 5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 2 or 3.

San Jon Series

The soils in the San Jon series are classified as fine-loamy, mixed, superactive, thermic Ustic Haplocalcids. These moderately deep, well drained soils formed in eolian materials and slope alluvium derived mainly from red bed sandstone and shale. They are on hillslopes. Slope ranges from 1 to 20 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of San Jon loam in an area of Lacoca-San Jon-Rock outcrop complex, 5 to 20 percent slopes; about 8 miles north of Santa Rosa; New Mexico State Plane Coordinates of east 404,600 feet and north 1,483,300 feet:

A—0 to 6 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; weak fine granular structure; loose, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine interstitial pores; 5 percent pebbles; strongly effervescent; slightly alkaline; clear smooth boundary.

Bw1—6 to 10 inches; reddish yellow (7.5YR 6/6) loam, strong brown (7.5YR 5/6) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine and medium tubular pores; 5 percent pebbles; violently effervescent; moderately alkaline; clear wavy boundary.

Bw2—10 to 20 inches; light brown (7.5YR 6/4) clay loam, strong brown (7.5YR 5/6) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common fine and few medium roots; many fine and medium tubular pores; violently effervescent; moderately alkaline; clear wavy boundary.

Bk—20 to 33 inches; light brown (7.5YR 6/4) clay loam, strong brown (7.5YR 5/6) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium roots; many fine and medium tubular pores; many fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline; abrupt wavy boundary.

R—33 to 43 inches; interbedded weathered sandstone and shale bedrock.

The depth to weathered sandstone or shale bedrock ranges from 20 to 40 inches.

The A horizon is fine sandy loam or loam. It has hue of 5YR or 7.5YR, value of 5 to 8 dry (4 to 7 moist), and chroma of 3 or 4. The Bw and Bk horizons are loam, gravelly loam, sandy clay loam, or clay loam. They have hue of 5YR or 7.5YR, value of 4 to 8 dry (3 to 7 moist), and chroma of 4 to 6. The calcium carbonate equivalent ranges from 20 to 30 percent.

Silver Series

The soils in the Silver series are classified as fine, mixed, superactive, mesic Ustic Haplargids. These deep, well drained soils formed in slope alluvium derived mainly

from sandstone, shale, and limestone. They are in swales. Slope ranges from 0 to 3 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Silver loam in an area of Darvey-Silver association, 0 to 3 percent slopes; about 13 miles north of Vaughn, 1,000 feet west and 2,100 feet south of the northeast corner of section 18, T. 7 N., R. 17 E.

A—0 to 6 inches; brown (7.5YR 4/2) loam, brown (7.5YR 4/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common medium roots; common fine and medium tubular pores; moderately alkaline; clear smooth boundary.

Bt1—6 to 26 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; moderate coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common fine roots; many fine tubular pores; common distinct clay films on faces of peds; slightly alkaline; gradual smooth boundary.

Bt2—26 to 35 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and very plastic; common fine roots; common fine tubular pores; common distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—35 to 60 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and very plastic; few very fine roots; few very fine pores; few faint clay films on faces of peds and lining pores; few fine masses and threads of calcium carbonate on faces of peds; strongly effervescent; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 2 to 4. The Bt and Btk horizons are clay loam or clay. They have hue of 7.5YR or 10YR, value of 4 to 6 dry (3 or 5 moist), and chroma of 2 to 4.

Slaughter Series

The soils in the Slaughter series are classified as clayey, mixed, superactive, thermic, shallow Petrocalcic Paleustolls. These shallow, well drained soils formed in loamy calcareous sediments derived mainly from the Ogallala Formation. They are on the edges of the plains in the eastern part of the county. Slope ranges from 0 to 2 percent. Elevation ranges from 5,000 to 5,600 feet. The average annual precipitation is 14 to 16 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Slaughter loam, 0 to 2 percent slopes; about 50 miles southeast of Santa Rosa, 800 feet west and 1,100 feet north of the southeast corner of section 22, R. 7 N., T. 26 E.

A—0 to 6 inches; reddish brown (5YR 4/3) loam, dark reddish brown (5YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; slightly alkaline; clear smooth boundary.

Bt—6 to 16 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline; abrupt smooth boundary.

Bkm—16 to 26 inches; indurated caliche.

Depth to the petrocalcic horizon ranges from 10 to 20 inches.

The A horizon has hue of 5YR or 7.5YR, value of 4 or 5 dry (3 or 4 moist), and

chroma of 2 or 3. The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 2 to 4.

Sparks Series

The soils in the Sparks series are classified as fine, mixed, superactive, thermic Calcic Paleargids. These deep, well drained soils formed in material derived mainly from Ogallala outwash. They are on plains in the eastern part of the county. Slope ranges from 0 to 2 percent. Elevation ranges from 5,000 to 5,600 feet. The average annual precipitation is 14 to 16 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Sparks loam, 0 to 2 percent slopes; about 50 miles southeast of Santa Rosa, 20 feet east and 1,500 feet north of the southwest corner of section 24, T. 7 N., R. 26 E.

Ap—0 to 8 inches; brown (7.5YR 4/4) loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few very fine and fine pores; neutral; abrupt smooth boundary.

Bt—8 to 19 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; extremely hard, very firm, sticky and plastic; common very fine and fine roots on faces of peds; few very fine interstitial pores; few distinct clay films on faces of peds and lining pores; neutral; clear wavy boundary.

Btk1—19 to 39 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; few fine and common very fine roots; few very fine tubular pores; common prominent clay films on faces of peds and lining pores; few small masses and threads and filaments of calcium carbonate; slightly effervescent; slightly alkaline; clear wavy boundary.

Btk2—39 to 46 inches; light reddish brown (5YR 6/4) clay loam, reddish brown (5YR 5/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; few fine roots; few very fine tubular pores; few distinct clay films on faces of peds and lining pores; few fine masses of calcium carbonate; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Btk3—46 to 60 inches; pink (5YR 8/4) clay loam, reddish yellow (5YR 7/6) moist; weak fine subangular blocky structure; slightly hard, firm, sticky and plastic; few fine roots; few distinct clay films on faces of peds and lining pores; common fine and medium masses of calcium carbonate; violently effervescent; moderately alkaline.

The depth to the calcic horizon is 33 to 60 inches.

The A horizon is very fine sandy loam or loam. It has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 or 3 moist), and chroma of 3 or 4. The Bt horizon is clay loam or clay. It has hue of 5YR or 7.5YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 4 to 6. The Btk horizon has hue of 5YR or 7.5YR, value of 4 to 8 dry (3 to 8 moist), and chroma of 3 to 8 (chroma of 5 occurs in some part of the lower part of the horizon). The calcium carbonate equivalent is greater than 15 percent in the lower part of the Btk horizon.

Travessilla Series

The soils in the Travessilla series are classified as loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents. These very shallow or shallow, well drained soils formed in slope alluvium and eolian materials and residuum weathered

from sandstone and shale. They are on hillslopes. Slope ranges from 1 to 75 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 55 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Travessilla fine sandy loam in an area of Travessilla-Hagerman-Rock outcrop complex, 1 to 15 percent slopes; about 9 miles northwest of Vaughn, 1,900 feet north and 2,200 feet west of the southeast corner of section 30, T. 6 N., R. 16 E.

A—0 to 6 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine interstitial pores; slightly effervescent; slightly alkaline; gradual wavy boundary.

C—6 to 12 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine interstitial pores; violently effervescent; slightly alkaline; abrupt wavy boundary.

R—12 to 22 inches; hard sandstone bedrock.

The depth to hard sandstone bedrock ranges from 4 to 20 inches.

The A and C horizons are fine sandy loam or channery loam. They have hue of 7.5YR or 10YR, value of 5 to 7 dry (3 to 5 moist), and chroma of 2 to 4.

Tucumcari Series

The soils in the Tucumcari series are classified as fine, smectitic, thermic Ustertic Haplargids. These deep, well drained soils formed in fine textured slope alluvium derived mainly from red bed sandstone and shale. They are on hillslopes and in swales. Slope ranges from 0 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Tucumcari loam in an area of Tucumcari-Redona association, 0 to 5 percent slopes; about 21 miles east of Santa Rosa, 2,500 feet east and 500 feet south of the northwest corner of section 29, T. 9 N., R. 25 E.

A—0 to 5 inches; dark reddish brown (5YR 3/4) loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and plastic; many very fine and fine and common medium roots; common fine interstitial and few fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Bt—5 to 19 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; common fine and few medium tubular pores; common distinct clay films on faces of peds and lining pores; strongly effervescent; moderately alkaline; clear wavy boundary.

Btk1—19 to 30 inches; reddish brown (5YR 5/4) clay, reddish brown (5YR 5/4) moist; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common fine and many very fine tubular pores; few distinct clay films on faces of peds and lining pores; very few fine and medium masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Btk2—30 to 49 inches; light reddish brown (5YR 6/4) clay loam, reddish brown (5YR 4/4) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine and fine tubular pores;

few faint clay films on faces of peds and lining pores; few fine masses of calcium carbonate; violently effervescent; moderately alkaline; clear wavy boundary.

Bss—49 to 60 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium angular blocky structure; very hard, firm, very sticky and very plastic; few faint slickensides; common pressure faces; strongly effervescent; moderately alkaline.

The A horizon is loam or clay loam. It has hue of 5YR or 7.5YR, value of 3 to 5 dry (2 to 4 moist), and chroma of 3 or 4. The Bt and Btk horizons are clay loam or clay. They have hue of 2.5YR to 7.5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6. The BC horizon, if it occurs, and the Bss horizon have hue of 2.5YR or 5YR, value of 4 to 6 dry (3 to 5 moist), and chroma of 3 to 6.

Tuloso Series

The soils in the Tuloso series are classified as loamy-skeletal, mixed, superactive, mesic Lithic Haplustepts. These very shallow or shallow, well drained soils formed in slope alluvium, eolian materials, and residuum derived mainly from Glorieta Sandstone. They are on ridges and hillslopes. Slope ranges from 1 to 15 percent. Elevation ranges from 5,600 to 6,200 feet. The average annual precipitation is 13 to 15 inches. The average annual air temperature is 52 to 54 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Tuloso very cobbly fine sandy loam in an area of Tuloso-Flugle association, 1 to 15 percent slopes; about 5 miles due south of Anton Chico; New Mexico State Plane Coordinates of east 258,500 feet and north 1,504,300 feet:

A—0 to 2 inches; brown (7.5YR 5/4) very cobbly fine sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 10 percent stones, 25 percent cobbles, and 5 percent pebbles; neutral; clear smooth boundary.

Bw—2 to 11 inches; brown (7.5YR 4/4) very cobbly fine sandy loam, brown (7.5YR 4/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many fine and medium roots; many fine interstitial pores; 15 percent stones, 30 percent cobbles, and 15 percent pebbles; neutral; abrupt wavy boundary.

R—11 to 21 inches; hard sandstone bedrock.

The depth to hard sandstone bedrock ranges from 6 to 20 inches. The content of coarse fragments ranges from 35 to 60 percent in the control section.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 3 or 4. The Bw horizon is fine sandy loam or loam in the fine-earth fraction. It has hue of 7.5YR or 10YR, value of 4 or 5 dry (3 or 4 moist), and chroma of 4 to 6.

Walkon Series

The soils in the Walkon series are classified as fine-loamy, mixed, superactive, thermic Ustic Haplargids. These moderately deep, well drained soils formed in slope alluvium and residuum derived mainly from red bed sandstone and shale. They are on hillslopes. Slope ranges from 1 to 5 percent. Elevation ranges from 4,200 to 5,300 feet. The average annual precipitation is 12 to 14 inches. The average annual air temperature is 58 to 60 degrees F. The average annual frost-free period is 180 to 200 days.

Typical pedon of Walkon fine sandy loam in an area of Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes; about 20 miles southeast of Santa Rosa, 500 feet east and 800 feet north of the southwest corner of sec. 13, T. 6 N., R. 22 E.

A—0 to 5 inches; reddish brown (5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak moderate subangular blocky structure parting to weak medium granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine interstitial pores; neutral; clear wavy boundary.
Bt1—5 to 11 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist, weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; slightly alkaline; clear smooth boundary.
Bt2—11 to 22 inches; yellowish red (5YR 4/6) sandy clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common distinct clay films on faces of peds; slightly alkaline; gradual smooth boundary.
Bt3—22 to 35 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium prismatic structure parting to weak medium subangular blocky; hard, very friable, sticky and plastic; few very fine roots; common very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; moderately alkaline; abrupt smooth boundary.
R—35 to 45 inches; hard sandstone bedrock.

The depth to hard bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 0 to 10 percent throughout the profile.

The A horizon is fine sandy loam or sandy loam. It has hue of 5YR or 7.5YR, value of 3 to 6 dry (2 to 5 moist), and chroma of 3 or 4. The Bt horizon is sandy clay loam or clay loam. It has hue of 2.5YR or 5YR, value of 3 to 6 dry (2 to 5 moist), and chroma of 3 to 6.

Winona Series

The soils in the Winona series are classified as loamy-skeletal, carbonatic, mesic Lithic Ustic Haplocalcids. These shallow, well drained soils formed in eolian materials and slope alluvium derived mainly from limestone. They are on hillslopes and ridges. Slope ranges from 0 to 30 percent. Elevation ranges from 4,700 to 6,200 feet. The average annual precipitation is 11 to 13 inches. The average annual air temperature is 52 to 54 degrees F. The average annual frost-free period is 150 to 170 days.

Typical pedon of Winona very channery fine sandy loam in an area of Winona-Gabaldon complex, 0 to 15 percent slopes; about 16 miles south-southwest of Vaughn, 960 feet west and 1,930 feet south of the northeast corner of section 28, T. 2 N., R. 16 E.

A—0 to 4 inches; brown (10YR 4/3) very channery fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; many fine interstitial pores; 30 percent limestone channers and 10 percent caliche and limestone cobbles; violently effervescent; moderately alkaline; clear wavy boundary.
Bk—4 to 12 inches; light brownish gray (10YR 6/2) very cobbly fine sandy loam, grayish brown (10YR 5/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; many fine and medium tubular pores; 15 percent limestone pebbles and 30 percent caliche and limestone cobbles; many pendants and coatings of calcium carbonate on coarse fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.
R—12 to 22 inches; hard limestone bedrock.

The depth to hard limestone bedrock is 10 to 20 inches. The content of coarse fragments in the control section ranges from 35 to 50 percent. The fragments are caliche and limestone cobbles and pebbles.

The A horizon is sandy loam or fine sandy loam in the fine-earth fraction. It has hue of 7.5YR or 10YR, value of 4 to 6 dry (3 or 4 moist), and chroma of 2 to 4. The Bk horizon is fine sandy loam, sandy loam, or loam in the fine-earth fraction. It has hue of 7.5YR or 10YR, value of 5 to 7 dry (4 to 6 moist), and chroma of 2 to 4.

Formation of the Soils

This section relates the factors of soil formation to the soils in Guadalupe County. It also discusses the geology of the survey area.

Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface that is capable of supporting plants. It consists of organic and mineral material and is the result of the interaction of genetic and environmental factors, specifically parent material, climate, plant and animal life, relief, and time. Each of these factors influences soil formation, and the effect of any one factor is modified by the other four.

Climate and plant and animal life are the active forces in soil formation. They act on the parent material, which in this survey area was originally a form of rock. The effects of climate, plant and animal life, and parent material are conditioned by relief. Finally, time is required for the development of distinct soil horizons. The factors of soil formation are so closely interrelated that few generalizations can be made.

Parent Material

Parent material determines to a large degree the texture, structure, color, fertility, mineralogy, and chemical composition of a soil. Geologic formations of Permian, Triassic, Tertiary, and Quaternary age are the source of the parent material of the soils in Guadalupe County *(7, 8, 9)*.

The soils in the southwestern and northwestern parts of the survey area formed in material derived from limestone, shale, sandstone, and gypsum of Permian age. Examples of such soils are the shallow Deama, Winona, and Tuloso soils and the deep Flugle, Gabaldon, Hollomex, and Reeves soils.

The soils in the eastern part of the survey area on both sides of and north of the Pecos River and along major drainageways of the Pecos River formed in material derived mainly from sandstone and shale of Triassic age. Examples of such soils are the shallow Lacoca, Regnier, and Travessilla soils; the moderately deep Hagerman, Hassell, San Jon, and Walkon soils; and the deep Montoya and Tucumcari soils.

The soils in the southeastern part of the survey area within the High Plains Major Land Resource Area formed in material derived mainly from the Ogallala Formation of Tertiary age. Examples of such soils are the shallow Slaughter soils and the deep Sparks soils.

The soils in the east-central, southern, and western parts of the survey area formed in alluvium of Quaternary age. Examples of such soils in the east-central and southern parts of the survey area are the shallow Kolar, Neso, and Palo soils; the moderately deep Pojo soils; and the deep Berwolf and Redona soils. The soils in these parts have had some eolian influence. The shallow and moderately deep soils are underlain by indurated caliche. Examples of soils in the western part of the survey area are the shallow Cardenas and Pastura soils and the deep Clovis, Darvey, Harvey, and Silver soils. The shallow soils are underlain by indurated caliche and have had eolian influence. Examples of soils that formed in more recent alluvium are Bluhol, Gallen, Ima, and La Lande soils.

Climate

Guadalupe County has a semiarid climate. The climate is characterized by abundant sunshine, low relative humidity, erratic rainfall, strong winds, and a wide variation in daily and seasonal temperatures. Summers are long and hot, and winters are usually short and mild. The windiest time is late in winter and early in spring. The soils rarely are frozen to a depth of more than a few inches.

Climate has a direct influence on soil formation and is the most important soil-forming factor in the survey area. Organic matter decomposes more rapidly in warm climates than in cold climates. Precipitation increases biological activity and thus increases the amount of organic matter produced. It also influences leaching and the movement of clay in soils.

Precipitation influences soil formation by entering the soil profile. In the soil, water enhances chemical reactions and the activity of micro-organisms and promotes plant growth. Water also moves downward in the soil and carries dissolved and suspended materials with it. These materials are deposited in the lower horizons.

The total precipitation in the survey area has not been sufficient to completely wet and leach the soils that have a high available water capacity. In Chispa and Harvey soils, partial leaching of calcium carbonate has taken place in the upper part of the soils and calcium carbonate has accumulated at the normal depth of wetting. Some soils have been sufficiently wet over a long enough period of time that leaching of calcium carbonate and translocation of clay minerals have occurred. Redona and Tucumcari soils are examples of soils that have an accumulation of clay in the subsoil.

Wind has had a strong influence on soil formation. Strong winds have eroded or partially eroded the surface layer in some parts of the survey area. Mido soils are an example of soils that formed in redeposited sandy material.

Plant and Animal Life

Plants, large animals, micro-organisms, earthworms, and many other forms of life on or in the soil have an effect on soil formation. They provide organic matter and help to decompose plant and animal residue. Large animals trample the soils, thus breaking the crusty surface and allowing more moisture to enter. Micro-organisms help to convert plant nutrients into something that is available to higher forms of plants.

Vegetation, mainly grasses, has had the greatest biologic influence on the soils in Guadalupe County. Grasses draw soil nutrients and water from the soil and replenishment the organic matter through residue. This residue also helps to protect the soil from water erosion and soil blowing.

Where the precipitation is greatest, such as in the southeastern part of the survey area, the soils contain more organic matter and have a grass cover. Slaughter and Sparks soils are examples of soils that have a high content of organic matter.

Relief

The shape and slope of the landscape influence soil formation, mostly through their effect on drainage, plant cover, soil temperature, surface runoff, and erosion. Changes in relief are relatively subtle in the survey area. The effect of slope on runoff has had the greatest influence on the general relief of the survey area.

Runoff rates and the risk of erosion are greater on sloping soils. Where less water enters the soil, less organic matter is produced and less development takes place within the soil profile. Soils in swales or concave areas receive more moisture, in the form of runoff from the higher-lying soils. This additional moisture enters the soil

profile and increases grass production, which increases the organic matter content of the surface layer and the development of the profile. Tucumcari and Redona soils are examples of soils that are more developed than adjacent soils because they receive additional moisture from runoff. Manzano soils are examples of soils that have a darker surface horizon and a higher content of organic matter because of additional moisture from runoff.

Exposure has had little effect on the formation of the soils in Guadalupe County. In general, north-facing slopes are cooler than south-facing slopes. The effects of exposure are more evident in more temperate areas and in areas that have greater relief.

Time

The length of time required for the formation of a given kind of soil depends largely upon the other factors of soil formation. An estimate of the age, or maturity, of a soil is based on the kind, thickness, and arrangement of genetic horizons. Generally, the greater the number of genetic horizons, the older the soil.

Tucumcari soils provide a good illustration of the interaction of the soil-forming processes. These soils formed in fine textured alluvium derived from shale of Triassic age. There has been accumulation of organic matter in the surface layer. Water percolating through the soil profile has weathered clay-forming minerals and translocated the clay into the subsoil. Calcium carbonate has been leached downward.

Ima and La Lande soils are examples of young soils in the survey area. They formed in recent alluvium, have a low content of organic matter, and do not have a strongly developed subsoil.

Geology

Geologic History

Guadalupe County is within the Pecos River Valley and the western margin of the Great Plains. Most of the county is part of the Pecos Slope and is underlain by a Paleozoic-Mesozoic sedimentary wedge, which thickens eastward. Geologic units cropping out in the county include Quaternary sediments throughout the county, Cretaceous and Jurassic carbonates in the northeastern corner of the county, and Triassic and Permian clastics and carbonates along river valleys of the Pecos River and its tributaries and in northern portions of the county. The land surface in Guadalupe County consists of a gentle (60 feet per mile) dip toward the east.

The Pedernal Uplift, an ancestral buried high and Tertiary uplift, is located west of Guadalupe County. The ancestral Pedernal Mountains uplifted during the Precambrian age and eroded to a peneplain by the beginning of the Paleozoic era. Lower and middle Paleozoic seas inundated the area before tectonic activity began in the middle to late Pennsylvanian age. The Pedernal Mountains were probably high and rugged. The bordering shore lines were pushed outward from the uplands by the continual rise of the mountains and alluvial deposition on the adjacent plains. By the middle Permian age, the mountains had eroded to a series of hills and ridges and the eastern region formed a low alluvial plain. The seas again inundated the region with a series of transgressive and regressive episodes. The Permian Glorieta Sandstone was deposited during the interaction of marine transgression and strong eolian input from the north. Deposition in this Permian marine environment consisted of limestones and dolomites of the Permian San Andres Formation and sediments of the Permian Bernal Formation (lower Artesia Group). The Permian Queen and Grayburg

Formations represent a change in location of the marine environment. In addition to this change, saline water conditions disappeared and very fine, reddish sands were deposited. The late Permian age was a time of erosion prior to deposition in the Triassic era.

Triassic deposits in the survey area are primarily alluvium that was deposited on vast alluvial plains. Subsidence associated with deposition accommodated the accumulation of 800 to 1,000 feet of clastic material by the end of the Triassic era. Deposition of terrestrial muds and sands in the Jurassic era was followed by inundation of Cretaceous seas. Uplift associated with the Laramide Orogeny during the Late Cretaceous and Early Tertiary periods may have produced some of the gentle eastward dip of the current land surface.

Erosion stripped most Cretaceous and Jurassic deposits, forming a vast pediment across the survey area by the Pliocene (late Tertiary) period. The entire area may have been one of non-deposition (with a surface of disconformity or unconformity) from the end of Cretaceous to late Miocene/early Pliocene time. Following this period of non-deposition, sediments that formed from the erosion of mountains to the west were deposited on a great alluvial plain of low eastward gradient. This sedimentary accumulation makes up the Ogallala Formation. During the Ogallala deposition, the Pecos River did not have its current drainage pattern through eastern New Mexico. All rivers draining off the southern end of the Rocky Mountains flowed over the Ogallala surface in an eastward to southeastward system of braided streams. Headward erosion of the Pecos River from the south eventually led to capture of southeastward-flowing streams and the present-day course of the Pecos River. Following stream capture and establishment of a southerly course for the Pecos River, the channel deepened an average of 1,000 feet below the surrounding prairie.

Geologic erosion has removed most Ogallala sediments in Guadalupe County, and the only remaining Ogallala exposures are in eastern portions of the county. Quaternary sediments in Guadalupe County consist of alluvial and eolian deposits of variable texture.

Geologic Formations and Materials

Quaternary sediments are represented across Guadalupe County. These pebbles, sands, and clays, which are associated with alluvial and eolian deposits, cover large areas in the southwestern and south-central portions of the county.

The Ogallala Formation consists of alluvial materials of Tertiary (Miocene-Pliocene) age. Remnants of Ogallala deposits east of the Pecos River are mainly on a high surface known as the Llano Estacado. Some outliers of Ogallala deposits occur in the western portions of the county. The Ogallala Formation consists of variable proportions of sand, gravel, silt, and clay.

Jurassic carbonates crop out in northeastern areas of the county and along the east-central boundary of Guadalupe County. The Morrison Formation consists of gray, green, and red variegated shale with gray to red sandstone. Underlying the Morrison Formation is the San Rafael Group, which consists of limestone, sandstone, siltstone, and shale.

Triassic outcrops of east-central New Mexico include fluvial and lacustrine sediments. They are divided into two formations—the Santa Rosa Sandstone and the Chinle Formation. In Guadalupe County, the Chinle Formation overlies the Santa Rosa Sandstone and is divided into a lower shale member, an intermediate Cuervo Sandstone Member, and an upper shale member. The total thickness of the Chinle Formation is approximately 300 feet. It is exposed across large portions of the eastern half of Guadalupe County; two areas crop out along the western border. The Santa Rosa Sandstone is mostly exposed in the western half of the county. The Santa Rosa Sandstone is divided into four members. The lower sandstone member (which

is 135 feet thick) and an overlying middle sandstone member (which is 112 feet thick) were deposited in alluvial fan and alluvial plain settings. The overlying middle mudstone member is 145 feet in thickness and was deposited in a deltaic environment. The upper sandstone member is about 149 feet in thickness and was also deposited in a deltaic environment.

In Guadalupe County, Permian rocks underlying Triassic outcrops are part of the Artesia Group and include the Queen and Grayburg Formations and the Bernal Formation. Massive sandstones of the Queen and Grayburg Formations are exposed along the Pecos River and are recognized by their orange-brown to grayish tan color and their massive bedding. They crop out under the Santa Rosa Sandstone. The Bernal Formation is designated as the clastic and evaporitic member and occurs in association with the underlying San Andres Limestone. The Bernal Formation consists of light red shale, gypsum, anhydrite, dolomite, siltstone, and sandstone. It is exposed at scattered locations in the eastern third of the county.

The Permian-age San Andres Limestone is mostly exposed in the southwestern portion of the county, but isolated exposures occur in the northwestern corner near Anton Chico, Dilia, and Colonias. It consists of light to dark gray, evenly bedded limestone and dolomite. Another Permian-age unit is the Glorieta Sandstone. This unit occurs along the Pecos River in the northwestern corner of the county. The Glorieta Sandstone is generally white to gray or tan, fine- to medium-grained quartz sandstone.

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Glossary

Acequia. A centuries-old cooperative system of communal management of irrigation water. It consists of a structure that diverts water from rivers and streams and conveys it through canals and farm ditches for use by crops. The acequias served as the basis of land settlement and government by Indo-Hispano communities for hundreds of years in New Mexico.

Adsorption. The increased concentration of molecules or ions at a surface, including exchangeable cations and anions on soil particles.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial flat. A small alluvial plain bordering a river. Alluvium is deposited on the plain during floods.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Bajada. A broad alluvial slope extending from the base of a mountain range out into a basin and formed by coalescence of separate alluvial fans.

Base saturation. The degree to which material having cation-exchange properties is

saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Basin. A depressed area with no surface outlet.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

Canyon. A long, deep, narrow, very steep-sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clastic(s). Pertaining to a rock or sediment composed of principally broken fragments that are derived from preexisting rocks or minerals and that have been transported some distance from their places of origin.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cuesta. A hill or ridge that has a gentle slope on one side and a steep slope on the other; specifically, an asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Disconformity. An unconformity in which the bedding planes above and below the break are essentially parallel, indicating a significant interruption in the orderly sequence of sedimentary rocks, generally by a considerable interval of erosion (or sometimes of nondeposition), and usually marked by a visible and irregular or uneven erosion surface of significant relief.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand but sometimes volcanic ash) that is either bare or covered with vegetation and is capable of movement from place to place but always retains its characteristic shape.

Dune field. Extensive deposits of sand in an area where the supply is abundant. Characteristically, individual dunes somewhat resemble barchans but are highly irregular in shape and crowded. Areas of the Sahara are an example.

Earthen pond. A body of water smaller than a lake, often built by excavation of or having an embankment constructed of natural soil materials without the use of concrete or synthetic liners.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or

angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum

rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat-topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

MLRA (Major Land Resource Area). Geographically associated land resource units that are several thousand acres in extent, characterized by a particular pattern of soils, climate, water resources, and land resource regions.

MLRA 70.—This area primarily includes the plains and valleys of the Pecos and Canadian Rivers in east-central New Mexico, southeastern Colorado, and the Trans Pecos area of west Texas.

MLRA 77.—This area is the nearly level Southern High Plains of the Texas panhandle, western Oklahoma, southern Kansas, and eastern New Mexico.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pediment. A broad, gently sloping rock-floored erosion surface or plain of low relief, typically developed by subaerial agents (including running water) in an arid or semiarid region at the base of an abrupt and receeding mountain front or plateau escarpment. It is underlain by bedrock (occasionally by older alluvial deposits) that may be bare but are more commonly partly mantled with a thin discontinuous veneer of alluvium derived from the upland masses and in transit across the surface.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher-lying areas of the erosion surface.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional

and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Peneplain. A low, nearly featureless, gently undulating land surface of considerable area, which presumably has been produced by the processes of long-continued subaerial erosion (primarily mass-wasting of stream erosion) almost to base level in the penultimate stage of a humid, fluvial geomorphic cycle.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Petrocalcic. An alluvial horizon in which secondary calcium carbonate or other carbonates have accumulated to the extent that the horizon is cemented or indurated.

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont. Lying or formed at the base of a mountain or mountain range; e.g., a piedmont terrace or a piedmont pediment.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could

penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannahs, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Ridge. A general term for a long, narrow elevation of the earth’s surface, usually sharp-crested with steep sides, occurring either independently or as part of a larger mountain or hill.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

River valley. An elongate depression of the earth’s surface, carved by a river during the course of its development.

Riverwash. The unstabilized sandy, silty, clayey, or gravelly sediment that is flooded, washed, and reworked frequently by rivers.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated

soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Swale. A slight depression, sometimes swampy, in the midst of generally level land.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1971-2000 at Santa Rosa, New Mexico)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	oF	°F	°F	Units	In	In	In		In
January--	54.3	24.8	39.5	75	1	8	0.42	0.09	0.72	1	3.2
February-	59.6	27.8	43.7	79	5	25	0.43	0.06	0.74	1	2.6
March----	66.6	33.2	49.9	84	14	89	0.67	0.17	1.13	1	1.0
April----	73.9	40.1	57.0	89	21	238	0.90	0.11	1.47	1	1.0
May------	82.3	49.0	65.6	95	31	485	1.40	0.37	2.40	3	0.1
June-----	90.7	57.6	74.1	104	45	723	1.84	0.44	3.39	3	0.0
July-----	92.2	62.3	77.2	103	53	843	2.44	1.47	3.44	4	0.0
August---	90.0	60.7	75.3	100	51	784	2.89	1.49	4.05	5	0.0
September	84.4	53.6	69.0	97	36	570	1.90	0.91	2.85	3	0.0
October--	75.2	42.2	58.7	90	24	286	1.23	0.25	1.96	2	0.6
November-	62.6	32.1	47.3	81	12	61	0.86	0.25	1.29	2	2.0
December-	54.3	25.3	39.8	74	-1	14	0.73	0.09	1.28	2	4.6
Yearly:											
Average	73.8	42.4	58.1	---	---	---	---	---	---	---	---
Extreme	109	-19	---	105	-6	---	---	---	---	---	---
Total--	---	---	---	---	---	4,126	15.71	12.62	18.00	28	15.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Santa Rosa, New Mexico)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 19	Apr. 23	May 7
2 years in 10 later than--	Apr. 11	Apr. 17	Apr 30
5 years in 10 later than--	Mar. 25	Apr. 6	Apr. 18
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 26	Oct. 16	Oct. 7
2 years in 10 earlier than--	Oct. 31	Oct. 21	Oct. 12
5 years in 10 earlier than-	Nov. 10	Oct. 31	Oct. 22

Table 3.—Growing Season

(Recorded in the period 1971-2000 at Santa Rosa, New Mexico)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	199	182	160
8 years in 10	209	190	169
5 years in 10	228	205	185
2 years in 10	247	220	201
1 year in 10	257	227	209

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
10	Regnier-Rock outcrop-Lacoca complex, 30 to 80 percent slopes	77,544	4.0
11	Tucumcari-Hassell clay loams, 0 to 5 percent slopes	11,177	0.6
13	Tucumcari-Redona association, 0 to 5 percent slopes	102,947	5.3
14	Kolar-Neso association, 0 to 5 percent slopes	15,954	0.8
15	Hilken-Palo fine sandy loams, 0 to 2 percent slopes	26,754	1.4
16	Redona-Berwolf fine sandy loams, 1 to 5 percent slopes	26,754	1.4
17	Lacoca-Rock outcrop complex, 10 to 25 percent slopes	35,946	1.9
19	Gallen very gravelly sandy loam, 5 to 30 percent slopes	13,441	0.7
20	Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes	26,905	1.4
22	Chispa-Redona association, 1 to 5 percent slopes	64,103	3.3
23	Minneosa very fine sandy loam, 0 to 2 percent slopes	8,110	0.4
25	Ima-La Lande fine sandy loams, 2 to 10 percent slopes	42,346	2.2
26	Tucumcari-Montoya complex, 0 to 3 percent slopes	12,173	0.6
27	San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes	162,426	8.4
28	Lacoca-San Jon-Rock outcrop complex, 5 to 20 percent slopes	59,271	3.1
29	Pojo-Neso-Berwolf association, 0 to 3 percent slopes	3,099	0.2
30	La Lande-Chispa complex, 3 to 15 percent slopes	39,887	2.1
32	Regnier-Lacoca-Rock outcrop complex, 3 to 25 percent slopes	49,840	2.6
33	Redona-Hilken loams, 0 to 2 percent slopes	63,179	3.3
34	Palo-Neso complex, 0 to 2 percent slopes	15,711	0.8
35	Hassell-Regnier clay loams, 0 to 3 percent slopes	8,709	0.4
36	Alama silt loam, 1 to 5 percent slopes	20,431	1.1
37	Hollomex-Reeves complex, 1 to 10 percent slopes	23,520	1.2
50	Conger-Hilken loams, 0 to 3 percent slopes	10,000	0.5
55	Conger-Redona association, 0 to 5 percent slopes	9,014	0.5
56	Karde loam, 3 to 10 percent slopes	1,478	*
57	Tuloso-Flugle association, 1 to 15 percent slopes	26,286	1.4
58	Deama cobbly loam, 3 to 25 percent slopes	9,982	0.5
70	Manzano loam, 0 to 2 percent slopes, rarely flooded	13,679	0.7
71	Clovis fine sandy loam, 0 to 3 percent slopes	104,492	5.4
72	Harvey-Darvey complex, 1 to 5 percent slopes	44,175	2.3
73	Winona-Gabaldon complex, 0 to 15 percent slopes	54,338	2.8
75	Pastura-Silver-Gabaldon complex, 0 to 5 percent slopes	36,543	1.9
76	Pastura-Clovis association, 0 to 8 percent slopes	115,215	5.9
77	Cardenas-Palma loamy fine sands, 0 to 3 percent slopes	38,171	2.0
79	Travessilla-Rock outcrop complex, 30 to 75 percent slopes	35,387	1.8
80	Travessilla-Hagerman-Rock outcrop complex, 1 to 15 percent slopes	67,723	3.5
81	Darvey-Silver association, 0 to 3 percent slopes	10,356	0.5
82	Clovis loam, 0 to 3 percent slopes	78,484	4.0
85	Harvey-Dean loams, 3 to 15 percent slopes	16,263	0.8
86	Palma loamy fine sand, 1 to 5 percent slopes	9,436	0.5
89	Clovis-Pastura association, 0 to 3 percent slopes	71,826	3.7
91	Pastura-Harvey association, 0 to 8 percent slopes	101,079	5.2
92	Winona-Rock outcrop complex, 15 to 30 percent slopes	3,935	0.2
93	Pastura loam, 0 to 5 percent slopes	67,744	3.5
94	Palma fine sandy loam, 0 to 5 percent slopes	26,015	1.3
95	Flugle loamy fine sand, 1 to 5 percent slopes	8,431	0.4
96	Mido loamy fine sand, 1 to 10 percent slopes	3,238	0.2
97	Bond-Hagerman complex, 1 to 10 percent slopes	27,257	1.4
98	La Fonda-Palma fine sandy loams, 5 to 15 percent slopes	26,427	1.4
101	Mido loamy fine sand, 0 to 1 percent slopes	390	*
105	Manzano loam, 0 to 2 percent slopes	1,121	*
106	Darvey loam, 0 to 2 percent slopes	210	*
107	Rune clay loam, 0 to 1 percent slopes	557	*
111	La Lande loam, 0 to 2 percent slopes	1,314	*
112	Ima sandy loam, 0 to 2 percent slopes	410	*
114	Alama silt loam, 0 to 1 percent slopes	260	*
116	Bluhol loam, 0 to 2 percent slopes	1,752	*

See footnote at end of table

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
120	Sparks loam, 0 to 2 percent slopes	5,869	0.3
121	Slaughter loam, 0 to 2 percent slopes	2,041	0.1
DAM	Dam	21	*
W	Water	7,239	0.4
	Total	1,948,385	100.3

* Less than 0.1 percent.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture

(Yields in the "N" columns are for nonirrigated areas; those in the "I" columns are for irrigated areas. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only the soils in the survey area that are used for crops or pasture are listed. AUM means animal unit month)

Map symbol and soil name	Land capability		Alfalfa hay		Grain sorghum		Pasture		Wheat	
	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Bu	Bu	AUM	AUM	Bu	Bu
101:										
Mido	6s	3e	---	5.50	---	---	---	10.00	---	75.00
105:										
Manzano	4c	2e	---	5.50	---	---	---	11.00	---	80.00
106:										
Darvey	6c	3e	---	5.00	---	---	---	10.00	---	65.00
107:										
Rune	6s	3s	---	5.00	---	---	---	10.00	---	70.00
111:										
La Lande	6e	2e	---	7.00	---	---	---	16.00	---	100.00
112:										
Ima	6c	3e	---	7.00	---	---	---	15.00	---	95.00
114:										
Alama	6c	2e	---	7.00	---	---	---	16.00	---	90.00
120:										
Sparks	4c	2s	---	---	30.00	---	---	---	20.00	---
121:										
Slaughter	4e	4s	---	---	25.00	---	---	---	15.00	---

Table 6.—Rangeland Productivity

(Soils without a rating are not suitable for grazing)

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
10:				
Regnier	Breaks (North Exposure)	1,400	800	600
Rock outcrop.				
Lacoca	Breaks (North Exposure)	1,100	700	400
11:				
Tucumcari	Clayey	1,500	900	500
Hassell	Clayey	1,500	900	500
13:				
Tucumcari	Clayey	1,500	900	500
Redona	Loamy	1,600	1,000	700
14:				
Kolar	Shallow	1,200	700	500
Neso	Very Shallow	700	400	250
15:				
Hilken	Loamy	1,600	1,000	700
Palo	Shallow	1,200	700	500
16:				
Redona	Sandy Loam	1,600	1,100	700
Berwolf	Sandy Loam	1,600	1,100	800
17:				
Lacoca	Shallow Sandstone	1,100	700	400
Rock outcrop.				
19:				
Gallen	Gravelly	1,450	950	450
20:				
Walkon	Sandy Loam	1,600	1,100	700
Newkirk	Sandstone Savannah	1,200	750	400
San Jon	Loamy	1,600	1,000	700
22:				
Chispa	Sandy Loam	1,600	1,100	700
Redona	Sandy Loam	1,600	1,100	700
23:				
Minneosa	Bottomland	5,200	2,400	1,600

Table 6.—Rangeland Productivity—Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
25:				
Ima	Sandy Loam	1,600	1,100	700
La Lande	Sandy Loam	1,600	1,000	700
26:				
Tucumcari	Clayey	1,500	900	500
Montoya	Swale	2,800	1,800	1,200
27:				
San Jon	Loamy	1,600	1,000	700
Lacoca	Shallow Sandstone	1,100	700	400
Rock outcrop.				
28:				
Lacoca	Sandstone Savannah	1,200	750	400
San Jon	Loamy	1,600	1,000	700
Rock outcrop.				
29:				
Pojo	Sandy Plains	2,500	1,800	900
Neso	Very Shallow	700	400	250
Berwolf	Sandy Plains	2,500	1,400	900
30:				
La Lande	Loamy	1,600	900	700
Chispa	Limy	1,600	1,100	700
32:				
Regnier	Red Shale	1,000	700	500
Lacoca	Shallow Sandstone	1,100	700	400
Rock outcrop.				
33:				
Redona	Loamy	1,600	1,000	700
Hilken	Loamy	1,600	1,000	700
34:				
Palo	Shallow	1,200	700	500
Neso	Very Shallow	700	400	250
35:				
Hassell	Clayey	1,500	900	500
Regnier	Red Shale	1,000	700	500
36:				
Alama	Loamy	1,600	1,000	700

Table 6.—Rangeland Productivity—Continued

Map symbol and soil name	Ecological site	Total dry-weight production: Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
37:				
Hollomex	Gyp Uplands	900	600	350
Reeves	Loamy	1,600	1,000	700
50:				
Conger	Shallow	1,400	850	450
Hilken	Loamy	1,600	1,000	700
55:				
Conger	Shallow	1,400	850	450
Redona	Loamy	1,600	1,000	700
56:				
Karde	Limy	1,400	950	500
57:				
Tuloso.				
Flugle	Deep Sand Savannah	1,800	1,000	300
58.				
Deama				
70:				
Manzano	Swale	2,000	1,500	900
71:				
Clovis	Sandy	1,200	800	400
72:				
Harvey	Limy	1,500	900	400
Darvey	Loamy	1,500	900	400
73:				
Winona	Shallow Limestone	1,400	1,000	700
Gabaldon	Swale	2,000	1,400	900
75:				
Pastura	Shallow	1,000	700	300
Silver	Loamy	1,500	900	400
Gabaldon	Swale	2,000	1,500	900
76:				
Pastura	Shallow	1,200	900	500
Clovis	Loamy	1,500	900	400
77:				
Cardenas	Shallow Plains	1,400	1,000	700
Palma	Sandy	1,500	900	250

Table 6.—Rangeland Productivity—Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
79:				
Travessilla	Breaks	1,500	1,000	600
Rock outcrop.				
80:				
Travessilla	Shallow Sandstone	1,000	---	300
Hagerman	Loamy	1,500	---	400
Rock outcrop.				
81:				
Darvey	Loamy	1,500	1,000	400
Silver	Loamy	1,500	1,000	400
82:				
Clovis	Loamy	1,500	1,100	400
85:				
Harvey	Limy	1,500	1,100	400
Dean	Limy	1,500	1,100	400
86:				
Palma	Sandy	1,500	1,000	250
89:				
Clovis	Loamy	1,500	900	400
Pastura	Shallow	1,000	700	300
91:				
Pastura	Shallow	1,000	700	300
Harvey	Limy	1,500	1,100	400
92:				
Winona	Limestone Hills	1,200	900	400
Rock outcrop.				
93:				
Pastura	Shallow	1,000	700	300
94:				
Palma	Sandy	1,200	900	400
95:				
Flugle	Deep Sand Savannah	1,800	1,200	300
96:				
Mido	Deep Sand	2,100	1,200	250
97:				
Bond	Shallow Sandy Savannah	1,200	900	300
Hagerman	Loamy	1,500	1,000	400

Table 6.—Rangeland Productivity—Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
98:				
La Fonda	Sandy	1,500	900	400
Palma	Sandy	1,200	900	400
101:				
Mido	Deep Sand	2,100	1,200	250
105:				
Manzano	Swale	2,000	1,700	900
106:				
Darvey	Loamy	1,500	1,000	400
107:				
Rune	Swale	2,000	1,500	900
111:				
La Lande	Loamy	1,600	1,200	700
112:				
Ima	Sandy Loam	1,600	1,100	700
114:				
Alama	Loamy	1,600	1,000	700
116:				
Bluhol	Wet Meadow	3,500	2,700	2,000
120:				
Sparks	Loamy	1,750	1,400	800
121:				
Slaughter	Shallow	2,000	1,500	1,000
DAM.				
Dam				
W.				
Water				

Table 7.—Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height. Only the map units suitable for windbreaks and environmental plantings are listed)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35
19.				
Gallen	American plum, Amur honeysuckle, common lilac, fourwing saltbush, oriental arborvitae, Siberian peashrub	eastern redcedar, pinyon pine	Arizona cypress, honeylocust, Russian olive	green ash, plains cottonwood
22:				
Chispa	American plum, Amur honeysuckle, common lilac, fourwing saltbush	---	Arizona cypress, eastern redcedar, pinyon pine, Rocky Mountain juniper	green ash, honeylocust, plains cottonwood, Russian olive
Redona	American plum, common lilac, fourwing saltbush	Austrian pine, eastern redcedar, pinyon pine, Rocky Mountain juniper	Arizona cypress, honeylocust, Russian olive	green ash, plains cottonwood, ponderosa pine
23:				
Minneosa	American plum, Nanking cherry, western sandcherry	pinyon pine	Arizona cypress	---
25:				
Ima	American plum, Amur honeysuckle, common lilac, fourwing saltbush	Douglas fir, pinyon pine, Rocky Mountain juniper	eastern redcedar, honeylocust, Russian olive	green ash
La Lande	American plum, fourwing saltbush, skunkbush sumac	pinyon pine, Siberian peashrub	Arizona cypress, eastern redcedar, honeylocust, Rocky Mountain juniper, Russian olive	plains cottonwood
27:				
San Jon	American plum, common lilac, fourwing saltbush, skunkbush sumac	eastern redcedar, Rocky Mountain juniper, Russian olive	Arizona cypress, Austrian pine, honeylocust	---
Lacoca.				
Rock outcrop.				
30:				
La Lande	American plum, Amur honeysuckle, common lilac, fourwing saltbush, skunkbush sumac	pinyon pine, Rocky Mountain juniper	eastern redcedar, honeylocust	green ash, plains cottonwood
Chispa	American plum, Amur honeysuckle, common lilac, fourwing saltbush	---	Arizona cypress, eastern redcedar, pinyon pine, Rocky Mountain juniper	green ash, honeylocust, plains cottonwood, Russian olive

Table 7.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35
35:				
Hassell	American plum, fourwing saltbush, Rocky Mountain juniper	pinyon pine, Russian olive	Arizona cypress, eastern redcedar	---
Regnier.				
37:				
Hollomex.				
Reeves	American plum, common lilac, Siberian peashrub, Tatarian honeysuckle	eastern redcedar, pinyon pine, Rocky Mountain juniper, Russian olive	Arizona cypress	---
71:				
Clovis	American plum, fourwing saltbush, skunkbush sumac	pinyon pine, Russian olive	Arizona cypress, eastern redcedar, Rocky Mountain juniper	green ash
80:				
Travessilla.				
Hagerman	American plum, fourwing saltbush	eastern redcedar, pinyon pine, Rocky Mountain juniper	Arizona cypress	---
Rock outcrop.				
82:				
Clovis	American plum, fourwing saltbush, skunkbush sumac	eastern redcedar, Rocky Mountain juniper, Russian olive	Arizona cypress, pinyon pine	green ash
85:				
Harvey	American plum, Amur honeysuckle, common lilac, fourwing saltbush	---	Arizona cypress, eastern redcedar, pinyon pine, Rocky Mountain juniper	green ash, honeylocust, plains cottonwood, Russian olive
Dean	fourwing saltbush, skunkbush sumac	---	Arizona cypress, Austrian pine, eastern redcedar, pinyon pine, Rocky Mountain juniper	green ash, honeylocust
101:				
Mido	American plum, fourwing saltbush, western sandcherry	eastern redcedar, pinyon pine, Rocky Mountain juniper	Arizona cypress, Austrian pine, green ash, ponderosa pine, Russian olive	plains cottonwood
Palma.				

Table 7.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35
105:				
Manzano	American plum, common lilac, fourwing saltbush, Siberian peashrub	eastern redcedar, Rocky Mountain juniper	Arizona cypress, Austrian pine, pinyon pine, ponderosa pine	green ash, plains cottonwood, Russian olive
106:				
Darvey	American plum, fourwing saltbush, Siberian peashrub, skunkbush sumac	pinyon pine	Arizona cypress, eastern redcedar, Rocky Mountain juniper, Russian olive	---
107:				
Rune	American plum, common lilac, fourwing saltbush	eastern redcedar, Rocky Mountain juniper, Russian olive	Arizona cypress, Austrian pine, green ash, ponderosa pine, Siberian elm	plains cottonwood
111:				
La Lande	American plum, Amur honeysuckle, common lilac, fourwing saltbush, skunkbush sumac	eastern redcedar, Rocky Mountain juniper	Arizona cypress, green ash, honeylocust, pinyon pine, ponderosa pine	---
112:				
Ima	American plum, Amur honeysuckle, common lilac, fourwing saltbush	eastern redcedar, honeylocust, Rocky Mountain juniper	Arizona cypress, green ash, pinyon pine, ponderosa pine, Russian olive, Siberian elm	---
114:				
Alama	American plum, common lilac, fourwing saltbush, skunkbush sumac, Tatarian honeysuckle	eastern redcedar, Rocky Mountain juniper, Russian olive	Arizona cypress, green ash, honeylocust, pinyon pine, ponderosa pine	plains cottonwood
116:				
Bluhol	American plum, common lilac, fourwing saltbush, Siberian peashrub, Tatarian honeysuckle	Rocky Mountain juniper	Arizona cypress, Russian olive	plains cottonwood
120:				
Sparks	American plum, Amur honeysuckle, common lilac, fourwing saltbush	eastern redcedar, Rocky Mountain juniper	Arizona cypress, Austrian pine, green ash, ponderosa pine, Russian olive	plains cottonwood

Table 8.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Gravel content	0.06
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
11:							
Tucumcari-----	50	Not limited		Not limited		Not limited	
Hassell-------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.41	Restricted permeability	0.41
						Depth to bedrock	0.29
						Slope	0.12
13:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Redona--------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.12
14:							
Kolar---------	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
Neso----------	25	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
						Slope	0.12
						Content of large stones	0.03
15:							
Hilken--------	50	Somewhat limited		Somewhat limited		Not limited	
		Depth to cemented pan	0.71	Depth to cemented pan	0.71		
Palo----------	35	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
						Too sandy	0.01

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
16:							
Redona--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.12
						Too sandy	0.01
Berwolf-------	40	Not limited		Not limited		Somewhat limited	
						Slope	0.12
17:							
Lacoca--------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
						Content of large stones	0.01
20:							
Walkon--------	45	Not limited		Not limited		Somewhat limited	
						Slope	0.12
						Depth to bedrock	0.10
Newkirk-------	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.12
San Jon-------	20	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Depth to bedrock	0.46
22:							
Chispa--------	45	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Redona--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
23:							
Minneosa------	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50			Dusty	0.50
25:							
Ima-----------	45	Not limited		Not limited		Very limited	
						Slope	1.00
La Lande------	35	Not limited		Not limited		Somewhat limited	
						Slope	0.50
26:							
Tucumcari-----	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
26:							
Montoya-------	40	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Restricted permeability	0.41	Restricted permeability	0.41
		Restricted permeability	0.41	Salinity	0.13	Salinity	0.13
		Salinity	0.13				
27:							
San Jon-------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to bedrock	0.90
						Dusty	0.50
						Slope	0.12
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	
28:							
Lacoca--------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.84	Slope	0.84	Slope	1.00
						Content of large stones	0.68
						Gravel content	0.32
San Jon-------	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.84	Slope	0.84	Slope	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Depth to bedrock	0.20
						Gravel content	0.06
Rock outcrop--	15	Not rated		Not rated		Not rated	
29:							
Pojo----------	45	Very limited		Very limited		Somewhat limited	
		Depth to cemented pan	0.99	Depth to cemented pan	0.99	Too sandy	0.70
		Too sandy	0.70	Too sandy	0.70		
Neso----------	35	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Gravel content	1.00
		Gravel content	0.76	Gravel content	0.76	Depth to cemented pan	1.00
		Too sandy	0.76	Too sandy	0.76	Too sandy	0.76
						Content of large stones	0.74
Berwolf-------	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.70	Too sandy	0.70	Too sandy	0.70
30:							
La Lande------	50	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Slope	0.16	Slope	0.16	Dusty	0.50
Chispa--------	35	Not limited		Not limited		Somewhat limited	
						Slope	0.50

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
32:							
Regnier-------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Gravel content	0.06
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	
33:							
Redona--------	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Hilken--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Depth to cemented pan	0.16	Depth to cemented pan	0.16		
34:							
Palo----------	70	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
						Too sandy	0.01
Neso----------	20	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Gravel content	0.07	Gravel content	0.07	Gravel content	1.00
						Content of large stones	0.05
35:							
Hassell-------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.41	Restricted permeability	0.41
Regnier-------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.06
36:							
Alama---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.12
37:							
Hollomex------	50	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
Reeves--------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Salinity	0.13	Salinity	0.13	Salinity	0.13
						Slope	0.12

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
50:							
Conger--------	50	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Hilken--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Depth to cemented pan	0.35	Depth to cemented pan	0.35		
55:							
Conger--------	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Slope	0.50
						Dusty	0.50
Redona--------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
56:							
Karde---------	85	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
57:							
Tuloso--------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Content of large stones	1.00
		Content of large stones	0.50	Content of large stones	0.50	Depth to bedrock	1.00
		Too sandy	0.01	Too sandy	0.01	Slope	1.00
						Gravel content	0.35
						Too sandy	0.01
Flugle--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.50
						Too sandy	0.01
58:							
Deama---------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	1.00
		Content of large stones	0.01	Content of large stones	0.01	Content of large stones	0.99
						Gravel content	0.56
70:							
Manzano-------	85	Very limited		Not limited		Not limited	
		Flooding	1.00				
71:							
Clovis--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
72:							
Harvey--------	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Slope	0.50
						Dusty	0.50

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
72:							
Darvey--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
73:							
Winona--------	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Depth to bedrock	1.00
						Slope	1.00
						Content of large stones	0.92
Gabaldon------	15	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00				
75:							
Pastura-------	45	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.12
						Content of large stones	0.01
Silver--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Restricted permeability	0.41	Restricted permeability	0.41	Restricted permeability	0.41
Gabaldon------	15	Very limited		Not limited		Not limited	
		Flooding	1.00				
76:							
Pastura-------	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
						Gravel content	0.72
						Slope	0.50
Clovis--------	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.12
						Too sandy	0.01
77:							
Cardenas------	65	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too sandy	0.58	Too sandy	0.58	Too sandy	0.58
Palma---------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.76	Too sandy	0.76	Too sandy	0.76

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Gravel content	1.00
		Gravel content	0.20	Gravel content	0.20	Dusty	0.50
						Content of large stones	0.01
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
Hagerman------	30	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
						Depth to bedrock	0.06
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Silver--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Restricted permeability	0.05	Restricted permeability	0.05	Restricted permeability	0.05
82:							
Clovis--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
85:							
Harvey--------	45	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Dusty	0.50
Dean----------	40	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
						Gravel content	0.06
86:							
Palma---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.76	Too sandy	0.76	Too sandy	0.76
						Slope	0.12
89:							
Clovis--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Pastura-------	40	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Content of large stones	0.01

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
91:							
Pastura-------	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.12
						Content of large stones	0.01
Harvey--------	25	Not limited		Not limited		Very limited	
						Slope	1.00
92:							
Winona--------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	0.64	Gravel content	0.64	Depth to bedrock	1.00
						Content of large stones	0.92
Rock outcrop--	20	Not rated		Not rated		Not rated	
93:							
Pastura-------	85	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.12
						Content of large stones	0.01
94:							
Palma---------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.12
95:							
Flugle--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.72	Too sandy	0.72	Too sandy	0.72
						Slope	0.12
96:							
Mido----------	85	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.31	Too sandy	0.31	Slope	1.00
						Too sandy	0.31
97:							
Bond----------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
Hagerman------	30	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Depth to bedrock	0.65
						Dusty	0.50

Table 8.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
98:							
La Fonda------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
		Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
Palma---------	30	Not limited		Not limited		Very limited	
						Slope	1.00
101:							
Mido----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
105:							
Manzano-------	85	Not limited		Not limited		Not limited	
106:							
Darvey--------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
107:							
Rune----------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
111:							
La Lande------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
112:							
Ima-----------	90	Not limited		Not limited		Not limited	
114:							
Alama---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
116:							
Bluhol--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Salinity	0.50	Salinity	0.50	Salinity	0.50
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
120:							
Sparks--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
		Dusty	0.50	Dusty	0.50	Dusty	0.50
121:							
Slaughter-----	75	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
DAM.							
Dam							
W.							
Water							

Table 8.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Water erosion	1.00	Slope	1.00	Slope	1.00
		Dusty	0.50	Dusty	0.50	Droughty	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Droughty	1.00
11:							
Tucumcari-----	50	Not limited		Not limited		Not limited	
Hassell-------	40	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.29
13:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Redona--------	40	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
14:							
Kolar---------	55	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.01	Too sandy	0.01	Depth to cemented pan	1.00
						Droughty	1.00
Neso----------	25	Not limited		Not limited		Very limited	
						Depth to cemented pan	1.00
						Droughty	1.00
						Carbonate content	1.00
						Gravel content	0.08
						Content of large stones	0.03
15:							
Hilken--------	50	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.71
						Droughty	0.03
Palo----------	35	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.01	Too sandy	0.01	Depth to cemented pan	1.00
						Droughty	0.98

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
16:							
Redona--------	50	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
Berwolf-------	40	Not limited		Not limited		Not limited	
17:							
Lacoca--------	50	Somewhat limited		Not limited		Very limited	
		Slope	0.18			Depth to bedrock	1.00
						Droughty	1.00
						Slope	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.18			Gravel content	1.00
						Slope	1.00
						Droughty	0.53
						Content of large stones	0.01
20:							
Walkon--------	45	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.10
Newkirk-------	25	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.79
San Jon-------	20	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.46
22:							
Chispa--------	45	Not limited		Not limited		Not limited	
Redona--------	35	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
23:							
Minneosa------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Flooding	0.60
25:							
Ima-----------	45	Not limited		Not limited		Not limited	
La Lande------	35	Not limited		Not limited		Not limited	
26:							
Tucumcari-----	45	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Montoya-------	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
						Salinity	0.13
27:							
San Jon-------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to bedrock	0.90
						Droughty	0.05

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
27:							
Lacoca--------	30	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	
28:							
Lacoca--------	35	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.84
						Content of large stones	0.68
San Jon-------	30	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.84
		Dusty	0.50	Dusty	0.50	Depth to bedrock	0.20
Rock outcrop--	15	Not rated		Not rated		Not rated	
29:							
Pojo----------	45	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.70	Too sandy	0.70	Depth to cemented pan	0.99
						Droughty	0.74
Neso----------	35	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.76	Too sandy	0.76	Depth to cemented pan	1.00
						Droughty	1.00
						Gravel content	0.76
						Content of large stones	0.74
Berwolf-------	15	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.70	Too sandy	0.70		
30:							
La Lande------	50	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.16
		Dusty	0.50	Dusty	0.50		
Chispa--------	35	Not limited		Not limited		Not limited	
32:							
Regnier-------	40	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Droughty	1.00
						Slope	0.63
Lacoca--------	30	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Depth to bedrock	1.00
						Droughty	1.00
						Slope	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
33:							
Redona--------	55	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Hilken--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	0.15
34:							
Palo----------	70	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.01	Too sandy	0.01	Depth to cemented pan	1.00
						Droughty	1.00
Neso----------	20	Not limited		Not limited		Very limited	
						Depth to cemented pan	1.00
						Droughty	1.00
						Gravel content	0.07
						Content of large stones	0.05
35:							
Hassell-------	50	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.03
Regnier-------	35	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.31
36:							
Alama---------	90	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
37:							
Hollomex------	50	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Droughty	1.00
Reeves--------	25	Not limited		Not limited		Very limited	
						Droughty	1.00
						Salinity	0.13
50:							
Conger--------	50	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	0.97
Hilken--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	0.35
55:							
Conger--------	55	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	0.40
Redona--------	40	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
56:							
Karde	85	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
57:							
Tuloso	45	Somewhat limited		Somewhat limited		Very limited	
		Content of large stones	0.50	Content of large stones	0.50	Depth to bedrock	1.00
		Too sandy	0.01	Too sandy	0.01	Content of large stones	1.00
						Droughty	1.00
Flugle	35	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
58:							
Deama	85	Somewhat limited		Somewhat limited		Very limited	
		Content of large stones	0.01	Content of large stones	0.01	Depth to bedrock	1.00
						Droughty	1.00
						Carbonate content	1.00
						Content of large stones	0.99
						Slope	0.96
70:							
Manzano	85	Not limited		Not limited		Not limited	
71:							
Clovis	80	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
72:							
Harvey	45	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Darvey	35	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
73:							
Winona	65	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Carbonate content	1.00
						Gravel content	0.99
						Content of large stones	0.92
Gabaldon	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
75:							
Pastura	45	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	1.00
						Content of large stones	0.01
Silver	30	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Gabaldon	15	Not limited		Not limited		Not limited	

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
76:							
Pastura-------	60	Not limited		Not limited		Very limited	
						Depth to cemented pan	1.00
						Droughty	0.98
Clovis--------	20	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
77:							
Cardenas------	65	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.58	Too sandy	0.58	Depth to cemented pan	1.00
						Droughty	1.00
Palma---------	25	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.76	Too sandy	0.76		
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Droughty	1.00
						Gravel content	0.20
						Content of large stones	0.01
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
Hagerman------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to bedrock	0.06
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Silver--------	30	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
82:							
Clovis--------	80	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
85:							
Harvey--------	45	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
		Dusty	0.50	Dusty	0.50		
Dean----------	40	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Carbonate content	1.00

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
86:							
Palma----------	90	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.76	Too sandy	0.76		
89:							
Clovis---------	50	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
Pastura--------	40	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	0.83
						Content of large stones	0.01
91:							
Pastura--------	60	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	0.95
						Content of large stones	0.01
Harvey---------	25	Not limited		Not limited		Not limited	
92:							
Winona---------	70	Somewhat limited		Not limited		Very limited	
		Slope	0.92			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
						Carbonate content	1.00
						Content of large stones	0.92
Rock outcrop---	20	Not rated		Not rated		Not rated	
93:							
Pastura--------	85	Somewhat limited		Somewhat limited		Very limited	
		Dusty	0.50	Dusty	0.50	Depth to cemented pan	1.00
						Droughty	0.80
						Content of large stones	0.01
94:							
Palma----------	85	Not limited		Not limited		Not limited	
95:							
Flugle---------	90	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.72	Too sandy	0.72		
96:							
Mido-----------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.31	Too sandy	0.31	Droughty	0.49
97:							
Bond-----------	50	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.94

Table 8.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
97:							
Hagerman------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Dusty	0.50	Dusty	0.50	Depth to bedrock	0.65
98:							
La Fonda------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.16
Palma---------	30	Not limited		Not limited		Not limited	
101:							
Mido----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.31	Too sandy	0.31	Droughty	0.48
105:							
Manzano-------	85	Not limited		Not limited		Not limited	
106:							
Darvey--------	85	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
107:							
Rune----------	85	Not limited		Not limited		Not limited	
111:							
La Lande------	90	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
112:							
Ima-----------	90	Not limited		Not limited		Not limited	
114:							
Alama---------	90	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
116:							
Bluhol--------	90	Not limited		Not limited		Very limited	
						Droughty	1.00
						Salinity	0.50
						Depth to saturated zone	0.19
120:							
Sparks--------	80	Somewhat limited		Somewhat limited		Not limited	
		Dusty	0.50	Dusty	0.50		
121:							
Slaughter-----	75	Not limited		Not limited		Very limited	
						Depth to cemented pan	1.00
						Droughty	0.73
DAM.							
Dam							
W.							
Water							

Table 9.—Wildlife Habitat, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
10:							
Regnier	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00		
Rock outcrop	30	Not rated		Not rated		Not rated	
Lacoca	20	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00		
11:							
Tucumcari	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.19	Too clayey	0.19	Too clayey	0.19
Hassell	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.70	Too clayey	0.70	Too clayey	0.70
		Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
		Percs slowly	0.24	Percs slowly	0.24	Percs slowly	0.24
		Droughty	0.01			Droughty	0.01
13:							
Tucumcari	50	Not limited		Not limited		Not limited	
Redona	40	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
14:							
Kolar	55	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Too arid	1.00	Too arid	1.00	Cemented pan	1.00
		Cemented pan	1.00	Cemented pan	1.00		
Neso	25	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Too gravelly, cobbly, or stony	0.53	Too gravelly, cobbly, or stony	0.53	Too gravelly, cobbly, or stony	0.53
15:							
Hilken	50	Very limited		Somewhat limited		Very limited	
		Droughty	1.00	Cemented pan	0.71	Droughty	1.00
		Cemented pan	0.71	Droughty	0.02	Cemented pan	0.71
Palo	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Droughty	1.00
		Cemented pan	1.00	Droughty	0.98	Cemented pan	1.00

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover		Domestic grasses and legumes for food and cover		Irrigated grain and seed crops for food and cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
16:							
Redona	50	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Berwolf	40	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.27
		Droughty	0.27				
17:							
Lacoca	50	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too arid	1.00	Too arid	1.00	Depth to bedrock	1.00
		Slope	0.08	Slope	0.08		
Rock outcrop	30	Not rated		Not rated		Not rated	
19:							
Gallen	80	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Too gravelly, cobbly, or stony	1.00	Droughty	0.52	Slope	1.00
		Slope	0.08	Slope	0.08		
20:							
Walkon	45	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Depth to bedrock	0.10
		Depth to bedrock	0.10	Depth to bedrock	0.10		
Newkirk	25	Very limited		Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Too arid	1.00	Depth to bedrock	1.00
		Too arid	1.00	Droughty	0.78		
San Jon	20	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.87
		Droughty	0.87	Depth to bedrock	0.46	Depth to bedrock	0.46
		Depth to bedrock	0.46			Slope	0.12
22:							
Chispa	45	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Redona	35	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
23:							
Minneosa	85	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.88
		Droughty	0.88	Flooding	0.50	Flooding	0.50
		Flooding	0.50				
25:							
Ima	45	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Slope	0.50
		Droughty	0.01			Droughty	0.01
La Lande	35	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
26:							
Tucumcari------	45	Not limited		Not limited		Not limited	
Montoya--------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.70	Too clayey	0.70	Too clayey	0.70
		Ponding	0.50	Ponding	0.50	Ponding	0.50
		Percs slowly	0.25	Percs slowly	0.25	Percs slowly	0.25
		Excess salt	0.12	Excess salt	0.12	Excess salt	0.12
27:							
San Jon--------	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Depth to bedrock	0.90	Depth to bedrock	0.90
		Depth to bedrock	0.90	Droughty	0.04		
Lacoca---------	30	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00	Slope	0.50
Rock outcrop---	15	Not rated		Not rated		Not rated	
28:							
Lacoca---------	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00	Slope	1.00
		Too gravelly, cobbly, or stony	0.39	Too gravelly, cobbly, or stony	0.39	Too gravelly, cobbly, or stony	0.39
San Jon--------	30	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Slope	1.00
		Droughty	0.71	Depth to bedrock	0.20	Droughty	0.71
		Depth to bedrock	0.20			Depth to bedrock	0.20
Rock outcrop---	15	Not rated		Not rated		Not rated	
29:							
Pojo-----------	45	Very limited		Somewhat limited		Very limited	
		Droughty	1.00	Cemented pan	0.99	Droughty	1.00
		Cemented pan	0.99	Droughty	0.74	Cemented pan	0.99
		Too sandy	0.50	Too sandy	0.50		
Neso-----------	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Too sandy	0.50	Too sandy	0.50		
Berwolf--------	15	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.54
		Droughty	0.54	Too sandy	0.50		
		Too sandy	0.50				

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
30:							
La Lande-------	50	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Slope	1.00
Chispa---------	35	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.01
		Droughty	0.01				
32:							
Regnier--------	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Too arid	1.00	Depth to bedrock	1.00
		Too arid	1.00	Droughty	1.00	Slope	1.00
Lacoca---------	30	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too arid	1.00	Too arid	1.00	Depth to bedrock	1.00
		Slope	0.01	Slope	0.01		
Rock outcrop---	15	Not rated		Not rated		Not rated	
33:							
Redona---------	55	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Hilken---------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Droughty	0.89	Cemented pan	0.16	Droughty	0.89
		Cemented pan	0.16			Cemented pan	0.16
34:							
Palo-----------	70	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Droughty	1.00
		Cemented pan	1.00	Droughty	0.99	Cemented pan	1.00
Neso-----------	20	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Too gravelly, cobbly, or stony	0.58	Too gravelly, cobbly, or stony	0.58	Too gravelly, cobbly, or stony	0.58
35:							
Hassell--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.70	Too clayey	0.70	Too clayey	0.70
		Percs slowly	0.24	Percs slowly	0.24	Percs slowly	0.24
		Depth to bedrock	0.03	Depth to bedrock	0.03	Depth to bedrock	0.03
Regnier--------	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Too arid	1.00	Depth to bedrock	1.00
		Too arid	1.00	Droughty	0.29	Too clayey	0.24
		Too clayey	0.24	Too clayey	0.24		
36:							
Alama----------	90	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
37:							
Hollomex-------	50	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
						Slope	0.88
Reeves---------	25	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Droughty	1.00
		Droughty	1.00	Droughty	1.00	Excess salt	0.12
		Excess salt	0.12	Excess salt	0.12		
50:							
Conger---------	50	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.97		
Hilken---------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Droughty	0.50	Cemented pan	0.35	Droughty	0.50
		Cemented pan	0.35			Cemented pan	0.35
55:							
Conger---------	55	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.38		
Redona---------	40	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
56:							
Karde----------	85	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Slope	0.88
57:							
Tuloso---------	45	Very limited		Very limited		Very limited	
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
Flugle---------	35	Somewhat limited		Somewhat limited		Not limited	
		Too arid	0.50	Too arid	0.50		
58:							
Deama----------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too gravelly, cobbly, or stony	0.95	Too gravelly, cobbly, or stony	0.95	Slope	1.00
						Too gravelly, cobbly, or stony	0.95
70:							
Manzano--------	85	Not limited		Not limited		Not limited	
71:							
Clovis---------	80	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
72:							
Harvey	45	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Darvey	35	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
73:							
Winona	65	Very limited		Very limited		Very limited	
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00	Slope	1.00
Gabaldon	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Ponding	0.50	Ponding	0.50	Ponding	0.50
75:							
Pastura	45	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Too arid	1.00	Too arid	1.00	Cemented pan	1.00
		Cemented pan	1.00	Cemented pan	1.00		
Silver	30	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Percs slowly	0.48
		Percs slowly	0.48	Percs slowly	0.48		
Gabaldon	15	Not limited		Not limited		Not limited	
76:							
Pastura	60	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.98		
Clovis	20	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
77:							
Cardenas	65	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Too sandy	0.50	Too sandy	0.50		
Palma	25	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.24
		Too sandy	0.50	Too sandy	0.50		
		Droughty	0.24				
79:							
Travessilla	60	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00	Too gravelly, cobbly, or stony	0.61
		Too gravelly, cobbly, or stony	0.61	Too gravelly, cobbly, or stony	0.61		
Rock outcrop	20	Not rated		Not rated		Not rated	

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
80:							
Travessilla----	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too arid	1.00	Too arid	1.00	Slope	1.00
Hagerman-------	30	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Slope	0.50
		Depth to bedrock	0.06	Depth to bedrock	0.06	Depth to bedrock	0.06
		Droughty	0.01			Droughty	0.01
Rock outcrop---	20	Not rated		Not rated		Not rated	
81:							
Darvey---------	60	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Silver---------	30	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
82:							
Clovis---------	80	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.08
		Droughty	0.08				
85:							
Harvey---------	45	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Slope	1.00
Dean-----------	40	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Slope	0.88
		Droughty	0.02			Droughty	0.02
86:							
Palma----------	90	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.16
		Too sandy	0.50	Too sandy	0.50		
		Droughty	0.16				
89:							
Clovis---------	50	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
Pastura--------	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.82		
91:							
Pastura--------	60	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.95		
Harvey---------	25	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Slope	0.50

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover: Rating class and limiting features	Value	Domestic grasses and legumes for food and cover: Rating class and limiting features	Value	Irrigated grain and seed crops for food and cover: Rating class and limiting features	Value
92:							
Winona----------	70	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too arid	1.00	Too arid	1.00	Depth to bedrock	1.00
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Slope	0.56	Slope	0.56		
Rock outcrop---	20	Not rated		Not rated		Not rated	
93:							
Pastura---------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	0.79		
94:							
Palma-----------	85	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.06
		Droughty	0.06				
95:							
Flugle----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.50	Too sandy	0.50	Droughty	0.06
		Too arid	0.50	Too arid	0.50		
		Droughty	0.06				
96:							
Mido------------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Too sandy	0.50	Slope	0.50
		Too sandy	0.50	Droughty	0.48		
97:							
Bond------------	50	Very limited		Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Too arid	1.00	Depth to bedrock	1.00
		Too arid	1.00	Droughty	0.94	Slope	0.50
Hagerman--------	30	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.81
		Droughty	0.81	Depth to bedrock	0.65	Depth to bedrock	0.65
		Depth to bedrock	0.65			Slope	0.50
98:							
La Fonda--------	50	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Slope	1.00
Palma-----------	30	Very limited		Very limited		Very limited	
		Too arid	1.00	Too arid	1.00	Slope	1.00
101:							
Mido------------	90	Very limited		Very limited		Very limited	
		Droughty	1.00	Too arid	1.00	Droughty	1.00
		Too arid	1.00	Too sandy	0.50		
		Too sandy	0.50	Droughty	0.46		
105:							
Manzano---------	85	Not limited		Not limited		Not limited	

Table 9.—Wildlife Habitat, Part I—Continued

Map symbol and soil name	Pct. of map unit	Grain and seed crops for food and cover		Domestic grasses and legumes for food and cover		Irrigated grain and seed crops for food and cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
106:							
Darvey---------	85	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
107:							
Rune-----------	85	Very limited		Very limited		Very limited	
		Percs slowly	1.00	Percs slowly	1.00	Percs slowly	1.00
		Too clayey	0.70	Too clayey	0.70	Too clayey	0.70
111:							
La Lande-------	90	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
112:							
Ima------------	90	Very limited		Very limited		Somewhat limited	
		Too arid	1.00	Too arid	1.00	Droughty	0.41
		Droughty	0.41				
114:							
Alama----------	90	Very limited		Very limited		Not limited	
		Too arid	1.00	Too arid	1.00		
116:							
Bluhol---------	90	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Wetness	0.75	Wetness	0.75	Wetness	0.75
		Excess salt	0.50	Excess salt	0.50	Excess salt	0.50
120:							
Sparks---------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Percs slowly	0.48	Percs slowly	0.48	Percs slowly	0.48
121:							
Slaughter------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Droughty	1.00
		Cemented pan	1.00	Droughty	0.72	Cemented pan	1.00
DAM:							
Dam------------	100	Not rated		Not rated		Not rated	
W:							
Water----------	95	Not rated		Not rated		Not rated	

Table 9.—Wildlife Habitat, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
10:					
Regnier-------	35	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Rock outcrop--	30	Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
11:					
Tucumcari-----	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	SICL, CL, SCL (surface) (moderately clayey)	0.50
		SICL, CL, SCL (surface) (moderately clayey)	0.50	Extreme soil temperatures	0.50
Hassell-------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	SICL, CL, SCL (surface) (moderately clayey)	0.50
		SICL, CL, SCL (surface) (moderately clayey)	0.50	Extreme soil temperatures	0.50
13:					
Tucumcari-----	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Redona--------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
14:					
Kolar---------	55	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
14:					
Neso----------	25	Very limited		Very limited	
		<2″ weighted available water capacity to 40" (droughty)	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
15:					
Hilken--------	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
		2-4" weighted available water capacity to 40" (moderately droughty)	0.02	2-4" weighted available water capacity to 40" (moderately droughty)	0.02
Palo----------	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.98
		2-4″ weighted available water capacity to 40″	0.98		
		(moderately droughty)	0.98	Extreme soil temperatures	0.50
16:					
Redona--------	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Berwolf-------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
17:					
Lacoca--------	50	Very limited		Very limited	
		<2″ weighted available water capacity to 40" (droughty)	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Rock outcrop--	30	Not rated		Not rated	

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants		Upland desertic shrubs and trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
19:					
Gallen--------	80	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.52
		2-4" weighted available water capacity to 40" (moderately droughty)	0.52	Extreme soil temperatures	0.50
		50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.46	50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.46
20:					
Walkon--------	45	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Newkirk-------	25	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.78
		2-4" weighted available water capacity to 40" (moderately droughty)	0.78	Extreme soil temperatures	0.50
San Jon-------	20	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
22:					
Chispa--------	45	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Redona--------	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
23:					
Minneosa------	85	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
25:					
Ima-----------	45	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
La Lande------	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants		Upland desertic shrubs and trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
26:					
Tucumcari-----	45	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Montoya-------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	SICL, CL, SCL (surface) (moderately clayey)	0.50
		SICL, CL, SCL (surface) (moderately clayey)	0.50	Extreme soil temperatures	0.50
		Salinity 4-8 mmhos/cm, max 0-20”	0.12	Salinity 4-8 mmhos/cm, max 0-20”	0.12
27:					
San Jon-------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
		2-4" weighted available water capacity to 40" (moderately droughty)	0.04	2-4" weighted available water capacity to 40" (moderately droughty)	0.04
Lacoca--------	30	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Rock outcrop--	15	Not rated		Not rated	
28:					
Lacoca--------	35	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
San Jon-------	30	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Rock outcrop--	15	Not rated		Not rated	

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
29:					
Pojo	45	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.74
		2-4" weighted available water capacity to 40" (moderately droughty)	0.74	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50	Extreme soil temperatures	0.50
Neso	35	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50	Extreme soil temperatures	0.50
		50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.50	50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.50
Berwolf	15	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50	Extreme soil temperatures	0.50
30:					
La Lande	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Chispa	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
32:					
Regnier-------	40	Very limited		Very limited	
		Soil moisture regime arid	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		<2" weighted available water capacity to 40" (droughty)	1.00	Extreme soil temperatures	0.50
Lacoca--------	30	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Rock outcrop--	15	Not rated		Not rated	
33:					
Redona--------	55	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Hilken--------	30	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
34:					
Palo----------	70	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		<2" weighted available water capacity to 40" (droughty)	1.00	Extreme soil temperatures	0.50
Neso----------	20	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
35:					
Hassell-------	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	SICL, CL, SCL (surface) (moderately clayey)	0.50
		SICL, CL, SCL (surface) (moderately clayey)	0.50	Extreme soil temperatures	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
35:					
Regnier-------	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	SICL, CL, SCL (surface) (moderately clayey)	0.50
		SICL, CL, SCL (surface) (moderately clayey)	0.50	Extreme soil temperatures	0.50
		2-4″ weighted available water capacity to 40″ (moderately droughty)	0.29	2-4″ weighted available water capacity to 40″ (moderately droughty)	0.29
36:					
Alama---------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
37:					
Hollomex------	50	Very limited		Very limited	
		<2″ weighted available water capacity to 40" (droughty)	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
Reeves--------	25	Very limited		Very limited	
		Soil moisture regime arid	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
		<2″ weighted available water capacity to 40″ (droughty)	1.00	Extreme soil temperatures	0.50
		Salinity 4-8 mmhos/cm, max 0-20″	0.12	Salinity 4-8 mmhos/cm, max 0-20″	0.12
50:					
Conger--------	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.97
		2-4″ weighted available water capacity to 40″ (moderately droughty)	0.97	Extreme soil temperatures	0.50
Hilken--------	35	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
55:					
Conger--------	55	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
		2-4" weighted available water capacity to 40" (moderately droughty)	0.38	2-4" weighted available water capacity to 40" (moderately droughty)	0.38
Redona--------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
56:					
Karde---------	85	Very limited		Not limited	
		Soil moisture regime arid	1.00		
57:					
Tuloso--------	45	Very limited		Very limited	
		<2″ weighted available water capacity to 40" (droughty)	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
		50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.76	50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.76
				Soil moisture regime ustic or xeric	0.50
Flugle--------	35	Somewhat limited		Somewhat limited	
		Soil moisture regime ustic or xeric	0.50	Soil moisture regime ustic or xeric	0.50
58:					
Deama---------	85	Very limited		Very limited	
		<2″ weighted available water capacity to 40" (droughty)	1.00	<2″ weighted available water capacity to 40" (droughty)	1.00
				Soil moisture regime ustic or xeric	0.50
70:					
Manzano-------	85	Not limited		Somewhat limited	
				Soil moisture regime ustic or xeric	0.50
71:					
Clovis--------	80	Very limited		Not limited	
		Soil moisture regime arid	1.00		

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
72:					
Harvey--------	45	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Darvey--------	35	Very limited		Not limited	
		Soil moisture regime arid	1.00		
73:					
Winona--------	65	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.99
		50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.99		
Gabaldon------	15	Not limited		Somewhat limited	
				Soil moisture regime ustic or xeric	0.50
75:					
Pastura-------	45	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00		
Silver--------	30	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Gabaldon------	15	Not limited		Somewhat limited	
				Soil moisture regime ustic or xeric	0.50
76:					
Pastura-------	60	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.98
		2-4” weighted available water capacity to 40” (moderately droughty)	0.98		
Clovis--------	20	Very limited		Not limited	
		Soil moisture regime arid	1.00		

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
77:					
Cardenas------	65	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50		
Palma---------	25	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50		
79:					
Travessilla---	60	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00		
Rock outcrop--	20	Not rated		Not rated	
80:					
Travessilla---	35	Very limited		Very limited	
		<2" weighted available water capacity to 40" (droughty)	1.00	<2" weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00		
Hagerman------	30	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Rock outcrop--	20	Not rated		Not rated	
81:					
Darvey--------	60	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Silver--------	30	Very limited		Not limited	
		Soil moisture regime arid	1.00		

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
82:					
Clovis--------	80	Very limited		Not limited	
		Soil moisture regime arid	1.00		
85:					
Harvey--------	45	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Dean----------	40	Very limited		Not limited	
		Soil moisture regime arid	1.00		
86:					
Palma---------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50		
89:					
Clovis--------	50	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Pastura-------	40	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.82
		2-4" weighted available water capacity to 40" (moderately droughty)	0.82		
91:					
Pastura-------	60	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.95
		2-4" weighted available water capacity to 40" (moderately droughty)	0.95		
Harvey--------	25	Very limited		Not limited	
		Soil moisture regime arid	1.00		

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
92:					
Winona--------	70	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Soil moisture regime arid	1.00	50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.64
		50-75% by weight surface rock fragments >2mm (moderately gravelly, stony, or cobbly)	0.64		
Rock outcrop--	20	Not rated		Not rated	
93:					
Pastura-------	85	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.79
		2-4” weighted available water capacity to 40” (moderately droughty)	0.79		
94:					
Palma---------	85	Very limited		Not limited	
		Soil moisture regime arid	1.00		
95:					
Flugle--------	90	Somewhat limited		Somewhat limited	
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		Soil moisture regime ustic or xeric	0.50	Soil moisture regime ustic or xeric	0.50
96:					
Mido----------	85	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50		0.48
		2-4” weighted available water capacity to 40” (moderately droughty)	0.48	2-4” weighted available water capacity to 40” (moderately droughty)	0.48

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
97:					
Bond----------	50	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	2-4" weighted available water capacity to 40" (moderately droughty)	0.94
		2-4" weighted available water capacity to 40" (moderately droughty)	0.94		
Hagerman------	30	Very limited		Not limited	
		Soil moisture regime arid	1.00		
98:					
La Fonda------	50	Very limited		Not limited	
		Soil moisture regime arid	1.00		
Palma---------	30	Very limited		Not limited	
		Soil moisture regime arid	1.00		
101:					
Mido----------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	LCOS, LS, LFS, LVFS, FS, FVS USDA soil surface texture (moderately sandy)	0.50
		LCOS, LS, LFS, LVFS USDA soil surface texture (moderately sandy)	0.50	2-4” weighted available water capacity to 40” (moderately droughty)	0.46
		2-4” weighted available water capacity to 40” (moderately droughty)	0.46		
105:					
Manzano-------	85	Not limited		Somewhat limited	
				Soil moisture regime ustic or xeric	0.50
106:					
Darvey--------	85	Very limited		Not limited	
		Soil moisture regime arid	1.00		
107:					
Rune----------	85	Somewhat limited		Somewhat limited	
		SICL, CL, SCL (surface) (moderately clayey)	0.50	SICL, CL, SCL (surface) (moderately clayey)	0.50
				Soil moisture regime ustic or xeric	0.50

Table 9.—Wildlife Habitat, Part II—Continued

Map symbol and soil name	Pct. of map unit	Upland wild herbaceous plants: Rating class and limiting features	Value	Upland desertic shrubs and trees: Rating class and limiting features	Value
111:					
La Lande------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
112:					
Ima-----------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
114:					
Alama---------	90	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
116:					
Bluhol--------	90	Very limited		Very limited	
		<2” weighted available water capacity to 40" (droughty)	1.00	<2” weighted available water capacity to 40" (droughty)	1.00
		Salinity 4-8 mmhos/cm, max 0-20"	0.50	Salinity 4-8 mmhos/cm, max 0-20”	0.50
				Extreme soil temperatures	0.50
120:					
Sparks--------	80	Very limited		Somewhat limited	
		Soil moisture regime arid	1.00	Extreme soil temperatures	0.50
121:					
Slaughter-----	75	Somewhat limited		Somewhat limited	
		2-4" weighted available water capacity to 40" (moderately droughty)	0.72	2-4" weighted available water capacity to 40" (moderately droughty)	0.72
				Extreme soil temperatures	0.50
				Soil moisture regime ustic or xeric	0.50
DAM.					
Dam					
W.					
Water					

Table 10.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
11:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Hassell-------	40	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.29		
13:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Redona--------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
14:							
Kolar---------	55	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
Neso----------	25	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
15:							
Hilken--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Depth to thin cemented pan	0.71	Shrink-swell	0.50
				Shrink-swell	0.50		
Palo----------	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
16:							
Redona--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Berwolf-------	40	Not limited		Not limited		Not limited	

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
17:							
Lacoca	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to hard bedrock	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
19:							
Gallen	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
20:							
Walkon	45	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.10	Shrink-swell	0.50	Depth to hard bedrock	0.10
Newkirk	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
San Jon	20	Not limited		Somewhat limited		Somewhat limited	
				Depth to soft bedrock	0.46	Slope	0.12
22:							
Chispa	45	Not limited		Not limited		Not limited	
Redona	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
23:							
Minneosa	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
25:							
Ima	45	Not limited		Not limited		Somewhat limited	
						Slope	0.50
La Lande	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
26:							
Tucumcari	45	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
Montoya	40	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
27:							
San Jon	40	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.90		

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
27:							
Lacoca	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
28:							
Lacoca	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.84	Slope	0.84	Slope	1.00
San Jon	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.84	Slope	0.84	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
				Depth to soft bedrock	0.20		
Rock outcrop	15	Not rated		Not rated		Not rated	
29:							
Pojo	45	Not limited		Very limited		Not limited	
				Depth to thin cemented pan	0.99		
Neso	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Content of large stones	0.13	Content of large stones	0.13	Content of large stones	0.13
Berwolf	15	Not limited		Not limited		Not limited	
30:							
La Lande	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
Chispa	35	Not limited		Not limited		Not limited	
32:							
Regnier	40	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Lacoca	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to hard bedrock	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
33:							
Redona--------	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Hilken--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
				Depth to thin cemented pan	0.16		
34:							
Palo----------	70	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Neso----------	20	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
35:							
Hassell-------	50	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
				Depth to soft bedrock	0.03		
Regnier-------	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
36:							
Alama---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
37:							
Hollomex------	50	Not limited		Not limited		Somewhat limited	
						Slope	0.88
Reeves--------	25	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
50:							
Conger--------	50	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
Hilken--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
				Depth to thin cemented pan	0.35		
55:							
Conger--------	55	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
Redona--------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
56:							
Karde	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.88
						Shrink-swell	0.50
57:							
Tuloso	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
						Content of large stones	1.00
Flugle	35	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
58:							
Deama	85	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	1.00
		Content of large stones	0.36	Content of large stones	0.36	Content of large stones	0.36
70:							
Manzano	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
71:							
Clovis	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
72:							
Harvey	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Darvey	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
73:							
Winona	65	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	0.41	Content of large stones	0.41	Slope	1.00
						Content of large stones	0.41
Gabaldon	15	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
75:							
Pastura	45	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
75:							
Silver--------	30	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Gabaldon------	15	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
76:							
Pastura-------	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Clovis--------	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
77:							
Cardenas------	65	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
Palma---------	25	Not limited		Not limited		Not limited	
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	1.00
Hagerman------	30	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Slope	0.50
		Depth to hard bedrock	0.06	Shrink-swell	0.50	Shrink-swell	0.50
						Depth to hard bedrock	0.06
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Silver--------	30	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
82:							
Clovis--------	80	Not limited		Not limited		Not limited	
85:							
Harvey--------	45	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
85:							
Dean----------	40	Not limited		Not limited		Somewhat limited	
						Slope	0.88
86:							
Palma---------	90	Not limited		Not limited		Not limited	
89:							
Clovis--------	50	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
Pastura-------	40	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
91:							
Pastura-------	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Harvey--------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50
92:							
Winona--------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	0.48	Content of large stones	0.48	Content of large stones	0.48
Rock outcrop--	20	Not rated		Not rated		Not rated	
93:							
Pastura-------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
94:							
Palma---------	85	Not limited		Not limited		Not limited	
95:							
Flugle--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
96:							
Mido----------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
97:							
Bond----------	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50

Table 10.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
97:							
Hagerman------	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50
98:							
La Fonda------	50	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.16	Slope	0.16	Shrink-swell	0.50
Palma---------	30	Not limited		Not limited		Very limited	
						Slope	1.00
101:							
Mido----------	90	Not limited		Not limited		Not limited	
105:							
Manzano-------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
106:							
Darvey--------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
107:							
Rune----------	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
111:							
La Lande------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
112:							
Ima-----------	90	Not limited		Not limited		Not limited	
114:							
Alama---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
116:							
Bluhol--------	90	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
120:							
Sparks--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
121:							
Slaughter-----	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
DAM.							
Dam							
W.							
Water							

Table 10.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
Regnier	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
Lacoca	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
11:							
Tucumcari	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.01		
Hassell	40	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.29	Depth to bedrock	0.29
		Shrink-swell	1.00	Cutbanks cave	0.10		
				Too clayey	0.03		
13:							
Tucumcari	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50	Too clayey	0.01		
Redona	40	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
14:							
Kolar	55	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Droughty	1.00
Neso	25	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Carbonate content	1.00
						Gravel content	0.08
						Content of large stones	0.03
15:							
Hilken	50	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Cutbanks cave	1.00	Depth to cemented pan	0.71
				Depth to thin cemented pan	0.71	Droughty	0.03

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
15:							
Palo----------	35	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.98
16:							
Redona--------	50	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Berwolf-------	40	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
17:							
Lacoca--------	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Gravel content	1.00
				Slope	1.00	Slope	1.00
						Droughty	0.53
						Content of large stones	0.01
20:							
Walkon--------	45	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to hard bedrock	1.00	Depth to bedrock	0.10
		Shrink-swell	0.50				
		Depth to hard bedrock	0.10	Cutbanks cave	0.10		
Newkirk-------	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	0.79
		Shrink-swell	0.50	Cutbanks cave	0.10		
San Jon-------	20	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Depth to bedrock	0.46
				Depth to soft bedrock	0.46		
22:							
Chispa--------	45	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
Redona--------	35	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Low strength	0.22				
23:							
Minneosa------	85	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60		

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
25:							
Ima-----------	45	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.22	Cutbanks cave	0.10		
La Lande------	35	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
		Low strength	0.22				
26:							
Tucumcari-----	45	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
Montoya-------	40	Very limited		Very limited		Very limited	
		Low strength	1.00	Cutbanks cave	1.00	Ponding	1.00
		Shrink-swell	1.00	Ponding	1.00	Salinity	0.13
		Ponding	1.00	Too clayey	0.12		
		Flooding	0.40				
27:							
San Jon-------	40	Not limited		Somewhat limited		Somewhat limited	
				Depth to soft bedrock	0.90	Depth to bedrock	0.90
						Droughty	0.05
				Cutbanks cave	0.10		
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
				Cutbanks cave	0.10		
Rock outcrop--	15	Not rated		Not rated		Not rated	
28:							
Lacoca--------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.84	Slope	0.84	Slope	0.84
				Cutbanks cave	0.10	Content of large stones	0.68
San Jon-------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.84	Slope	0.84	Slope	0.84
		Low strength	0.78	Depth to soft bedrock	0.20	Depth to bedrock	0.20
		Shrink-swell	0.50				
				Cutbanks cave	0.10		
Rock outcrop--	15	Not rated		Not rated		Not rated	
29:							
Pojo----------	45	Not limited		Somewhat limited		Very limited	
				Depth to thin cemented pan	0.99	Depth to cemented pan	0.99
				Cutbanks cave	0.10	Droughty	0.74

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
29:							
Neso----------	35	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Content of large stones	0.13	Content of large stones	0.13	Droughty	1.00
						Gravel content	0.76
				Cutbanks cave	0.10	Content of large stones	0.74
Berwolf-------	15	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
30:							
La Lande------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.16	Slope	0.16
		Slope	0.16	Cutbanks cave	0.10		
Chispa--------	35	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
32:							
Regnier-------	40	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Shrink-swell	0.50	Cutbanks cave	0.10		
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Rock outcrop--	15	Not rated		Not rated		Not rated	
33:							
Redona--------	55	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Hilken--------	30	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Cutbanks cave	1.00	Depth to cemented pan	0.15
				Depth to thin cemented pan	0.16		
34:							
Palo----------	70	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	1.00
Neso----------	20	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Gravel content	0.07
						Content of large stones	0.05

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
35:							
Hassell-------	50	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Depth to bedrock	0.03
		Shrink-swell	1.00	Too clayey	0.03		
				Depth to soft bedrock	0.03		
Regnier-------	35	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
						Droughty	0.31
		Shrink-swell	0.50	Cutbanks cave	0.10		
36:							
Alama---------	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
37:							
Hollomex------	50	Not limited		Somewhat limited		Very limited	
				Cutbanks cave	0.10	Droughty	1.00
Reeves--------	25	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Cutbanks cave	0.10	Droughty	1.00
		Shrink-swell	0.50			Salinity	0.13
50:							
Conger--------	50	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Droughty	0.97
Hilken--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Depth to thin cemented pan	0.35	Depth to cemented pan	0.35
				Cutbanks cave	0.10		
55:							
Conger--------	55	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Droughty	0.40
Redona--------	40	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
56:							
Karde---------	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
57:							
Tuloso--------	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Content of large stones	1.00
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
				Cutbanks cave	0.10		
Flugle--------	35	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
58:							
Deama---------	85	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.96	Slope	0.96	Carbonate content	1.00
		Content of large stones	0.36	Content of large stones	0.36	Content of large stones	0.99
				Cutbanks cave	0.10	Slope	0.96
70:							
Manzano-------	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
		Flooding	0.40				
71:							
Clovis--------	80	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
72:							
Harvey--------	45	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
Darvey--------	35	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
73:							
Winona--------	65	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Content of large stones	0.41	Content of large stones	0.41	Carbonate content	1.00
						Gravel content	0.99
				Cutbanks cave	0.10	Content of large stones	0.92
Gabaldon------	15	Very limited		Very limited		Very limited	
		Low strength	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
		Flooding	0.40				
75:							
Pastura-------	45	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	1.00
						Content of large stones	0.01
Silver--------	30	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
75:							
Gabaldon------	15	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
		Flooding	0.40				
76:							
Pastura-------	60	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.98
		Low strength	0.22				
Clovis--------	20	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
77:							
Cardenas------	65	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
Palma---------	25	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Gravel content	0.20
						Content of large stones	0.01
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
				Cutbanks cave	0.10		
Hagerman------	30	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Depth to bedrock	0.06
		Depth to hard bedrock	0.06				
				Cutbanks cave	0.10		
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
Silver--------	30	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.08		

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
82:							
Clovis--------	80	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
85:							
Harvey--------	45	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	0.10	Slope	0.04
		Shrink-swell	0.50	Slope	0.04		
		Slope	0.04				
Dean----------	40	Not limited		Very limited		Very limited	
				Cutbanks cave	1.00	Carbonate content	1.00
86:							
Palma---------	90	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
89:							
Clovis--------	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
Pastura-------	40	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.83
		Low strength	0.22			Content of large stones	0.01
91:							
Pastura-------	60	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.95
		Low strength	0.22			Content of large stones	0.01
Harvey--------	25	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
92:							
Winona--------	70	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.48	Content of large stones	0.48	Droughty	1.00
				Cutbanks cave	0.10	Carbonate content	1.00
						Content of large stones	0.92
Rock outcrop--	20	Not rated		Not rated		Not rated	
93:							
Pastura-------	85	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.80
		Low strength	0.22			Content of large stones	0.01

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
94:							
Palma	85	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
95:							
Flugle	90	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
96:							
Mido	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.49
97:							
Bond	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	0.94
		Shrink-swell	0.50	Cutbanks cave	0.10		
Hagerman	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
		Shrink-swell	0.50	Cutbanks cave	0.10		
98:							
La Fonda	50	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.16	Slope	0.16
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.16				
Palma	30	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
101:							
Mido	90	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.48
105:							
Manzano	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
106:							
Darvey	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
107:							
Rune	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
111:							
La Lande	90	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
		Low strength	0.22				

Table 10.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
112:							
Ima-----------	90	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
114:							
Alama---------	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
116:							
Bluhol--------	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.19	Depth to saturated zone	1.00	Droughty	1.00
						Salinity	0.50
				Cutbanks cave	0.10	Depth to saturated zone	0.19
120:							
Sparks--------	80	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
121:							
Slaughter-----	75	Very limited		Very limited		Very limited	
		Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00	Depth to cemented pan	1.00
		Low strength	1.00	Cutbanks cave	0.10	Droughty	0.73
		Shrink-swell	0.50				
DAM.							
Dam							
W.							
Water							

Table 11.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
10:					
Regnier-------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop--------	30	Not rated		Not rated	
Lacoca--------------	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
11:					
Tucumcari-----------	50	Very limited		Not limited	
		Restricted permeability	1.00		
Hassell-------------	40	Very limited		Very limited	
		Restricted permeability	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.08
13:					
Tucumcari-----------	50	Very limited		Not limited	
		Restricted permeability	1.00		
Redona--------------	40	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.08
14:					
Kolar---------------	55	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
Neso----------------	25	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Slope	0.08
15:					
Hilken--------------	50	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Restricted permeability	0.46	Seepage	0.53
Palo----------------	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
16:					
Redona	50	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.08
Berwolf	40	Not limited		Very limited	
				Seepage	1.00
				Slope	0.08
17:					
Lacoca	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	30	Not rated		Not rated	
19:					
Gallen	80	Very limited		Very limited	
		Slope	1.00	Seepage	1.00
				Slope	1.00
20:					
Walkon	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	1.00	Seepage	0.21
				Slope	0.08
Newkirk	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Seepage	0.53
				Slope	0.08
San Jon	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.46	Slope	0.68
				Seepage	0.53
22:					
Chispa	45	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
Redona	35	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
23:					
Minneosa	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
25:					
Ima	45	Somewhat limited		Very limited	
		Restricted permeability	0.46	Seepage	1.00
				Slope	0.92

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
25:					
La Lande------------	35	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
26:					
Tucumcari-----------	45	Very limited		Not limited	
		Restricted permeability	1.00		
Montoya-------------	40	Very limited		Very limited	
		Restricted permeability	1.00	Ponding	1.00
		Ponding	1.00	Flooding	0.40
		Flooding	0.40		
27:					
San Jon-------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.08
Lacoca--------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.92
				Seepage	0.21
Rock outcrop--------	15	Not rated		Not rated	
28:					
Lacoca--------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.84	Slope	1.00
				Seepage	0.21
San Jon-------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	1.00	Slope	1.00
		Slope	0.84	Seepage	0.21
Rock outcrop--------	15	Not rated		Not rated	
29:					
Pojo----------------	45	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
Neso----------------	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Content of large stones	0.13		
Berwolf-------------	15	Not limited		Very limited	
				Seepage	1.00

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
30:					
La Lande	50	Somewhat limited		Very limited	
		Restricted permeability	0.46	Slope	1.00
		Slope	0.16	Seepage	0.53
Chispa	35	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
32:					
Regnier	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.63	Slope	1.00
Lacoca	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	15	Not rated		Not rated	
33:					
Redona	55	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
Hilken	30	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Restricted permeability	0.46	Seepage	0.53
34:					
Palo	70	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53
Neso	20	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
35:					
Hassell	50	Very limited		Very limited	
		Restricted permeability	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00		
Regnier	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
36:					
Alama	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.08

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
37:					
Hollomex	50	Somewhat limited		Very limited	
		Restricted permeability	0.72	Slope	1.00
				Seepage	0.27
Reeves	25	Somewhat limited		Somewhat limited	
		Restricted permeability	0.72	Seepage	0.53
				Slope	0.08
50:					
Conger	50	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
Hilken	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Restricted permeability	0.46	Seepage	0.53
55:					
Conger	55	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Slope	0.32
Redona	40	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
56:					
Karde	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
57:					
Tuloso	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	0.56
				Seepage	0.27
Flugle	35	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
58:					
Deama	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.96	Slope	1.00
		Content of large stones	0.36	Content of large stones	0.83
				Seepage	0.53

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
70:					
Manzano	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
		Flooding	0.40	Flooding	0.40
71:					
Clovis	80	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
72:					
Harvey	45	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
Darvey	35	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
73:					
Winona	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	0.41	Slope	1.00
				Seepage	0.21
				Content of large stones	0.03
Gabaldon	15	Very limited		Very limited	
		Restricted permeability	1.00	Ponding	1.00
		Ponding	1.00	Flooding	0.40
		Flooding	0.40		
75:					
Pastura	45	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Slope	0.08
Silver	30	Very limited		Not limited	
		Restricted permeability	1.00		
Gabaldon	15	Very limited		Somewhat limited	
		Restricted permeability	1.00	Flooding	0.40
		Flooding	0.40		
76:					
Pastura	60	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53
				Slope	0.32
Clovis	20	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.08

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
77:					
Cardenas------------	65	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
Palma---------------	25	Not limited		Very limited	
				Seepage	1.00
79:					
Travessilla---------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
Rock outcrop--------	20	Not rated		Not rated	
80:					
Travessilla---------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	1.00
				Seepage	0.27
Hagerman------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.46	Slope	0.92
				Seepage	0.53
Rock outcrop--------	20	Not rated		Not rated	
81:					
Darvey--------------	60	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
Silver--------------	30	Very limited		Not limited	
		Restricted permeability	1.00		
82:					
Clovis--------------	80	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.53
85:					
Harvey--------------	45	Somewhat limited		Very limited	
		Restricted permeability	0.46	Slope	1.00
				Seepage	0.53
		Slope	0.04		
Dean----------------	40	Somewhat limited		Very limited	
		Restricted permeability	0.46	Slope	1.00
				Seepage	0.53

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
86:					
Palma	90	Not limited		Very limited	
				Seepage	1.00
				Slope	0.08
89:					
Clovis	50	Somewhat limited		Very limited	
		Restricted permeability	0.46	Seepage	1.00
Pastura	40	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53
91:					
Pastura	60	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53
				Slope	0.08
Harvey	25	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Slope	0.92
				Seepage	0.53
92:					
Winona	70	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	0.48	Seepage	0.53
				Content of large stones	0.42
Rock outcrop	20	Not rated		Not rated	
93:					
Pastura	85	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.53
				Slope	0.08
94:					
Palma	85	Not limited		Very limited	
				Seepage	1.00
				Slope	0.08
95:					
Flugle	90	Somewhat limited		Very limited	
		Restricted permeability	0.46	Seepage	1.00
				Slope	0.08
96:					
Mido	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.92

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
97:					
Bond	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.92
				Seepage	0.50
Hagerman	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.46	Slope	0.92
				Seepage	0.53
98:					
La Fonda	50	Somewhat limited		Very limited	
		Restricted permeability	0.46	Slope	1.00
				Seepage	0.53
		Slope	0.16		
Palma	30	Not limited		Very limited	
				Seepage	1.00
				Slope	1.00
101:					
Mido	90	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
105:					
Manzano	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
106:					
Darvey	85	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
107:					
Rune	85	Very limited		Not limited	
		Restricted permeability	1.00		
111:					
La Lande	90	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
112:					
Ima	90	Not limited		Very limited	
				Seepage	1.00
114:					
Alama	90	Very limited		Not limited	
		Restricted permeability	1.00		

Table 11.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
116:					
Bluhol	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
120:					
Sparks	80	Very limited		Not limited	
		Restricted permeability	1.00		
121:					
Slaughter	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
DAM.					
Dam					
W.					
Water					

Table 11.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
11:							
Tucumcari-----	50	Not limited		Not limited		Not limited	
Hassell-------	40	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
						Hard to compact	1.00
13:							
Tucumcari-----	50	Not limited		Not limited		Not limited	
Redona--------	40	Not limited		Not limited		Not limited	
14:							
Kolar---------	55	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
						Seepage	0.52
Neso----------	25	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
						Carbonate content	1.00
						Gravel content	0.66
						Seepage	0.52
15:							
Hilken--------	50	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Palo----------	35	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
16:							
Redona--------	50	Not limited		Not limited		Not limited	
Berwolf-------	40	Not limited		Not limited		Somewhat limited	
						Seepage	0.52

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17:							
Lacoca--------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
						Slope	1.00
						Seepage	0.52
20:							
Walkon--------	45	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Newkirk-------	25	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
San Jon-------	20	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
22:							
Chispa--------	45	Not limited		Not limited		Not limited	
Redona--------	35	Not limited		Not limited		Not limited	
23:							
Minneosa------	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	0.52
25:							
Ima-----------	45	Not limited		Not limited		Not limited	
La Lande------	35	Not limited		Not limited		Not limited	
26:							
Tucumcari-----	45	Not limited		Not limited		Not limited	
Montoya-------	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Hard to compact	1.00
		Flooding	0.40	Flooding	0.40	Ponding	1.00
27:							
San Jon-------	40	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Lacoca--------	30	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
28:							
Lacoca	35	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Slope	0.84	Depth to bedrock	1.00
		Slope	0.84			Slope	0.84
San Jon	30	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Slope	0.84	Depth to bedrock	1.00
		Slope	0.84			Slope	0.84
Rock outcrop	15	Not rated		Not rated		Not rated	
29:							
Pojo	45	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
						Seepage	0.52
Neso	35	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
		Content of large stones	0.13			Seepage	1.00
						Gravel content	0.39
						Content of large stones	0.13
Berwolf	15	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
30:							
La Lande	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16	Slope	0.16
Chispa	35	Not limited		Not limited		Not limited	
32:							
Regnier	40	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Slope	0.63	Depth to bedrock	1.00
		Slope	0.63			Slope	0.63
Lacoca	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
33:							
Redona	55	Not limited		Not limited		Not limited	
Hilken	30	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
34:							
Palo	70	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
34:							
Neso----------	20	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
						Gravel content	0.57
						Seepage	0.52
35:							
Hassell-------	50	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
						Hard to compact	1.00
Regnier-------	35	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
36:							
Alama---------	90	Not limited		Not limited		Not limited	
37:							
Hollomex------	50	Not limited		Not limited		Not limited	
Reeves--------	25	Not limited		Not limited		Not limited	
50:							
Conger--------	50	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Hilken--------	35	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
55:							
Conger--------	55	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Redona--------	40	Not limited		Not limited		Not limited	
56:							
Karde---------	85	Not limited		Not limited		Not limited	
57:							
Tuloso--------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00			Content of large stones	1.00
		Content of large stones	1.00			Seepage	0.52
Flugle--------	35	Not limited		Not limited		Not limited	
58:							
Deama---------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Carbonate content	1.00
		Content of large stones	0.36			Slope	0.96
						Content of large stones	0.36

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70:							
Manzano-------	85	Somewhat limited		Somewhat limited		Not limited	
		Flooding	0.40	Flooding	0.40		
71:							
Clovis--------	80	Not limited		Not limited		Not limited	
72:							
Harvey--------	45	Not limited		Not limited		Not limited	
Darvey--------	35	Not limited		Not limited		Not limited	
73:							
Winona--------	65	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
		Content of large stones	0.41			Carbonate content	1.00
						Content of large stones	0.41
						Gravel content	0.14
Gabaldon------	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
75:							
Pastura-------	45	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Silver--------	30	Not limited		Not limited		Very limited	
						Hard to compact	1.00
Gabaldon------	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
76:							
Pastura-------	60	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Clovis--------	20	Not limited		Not limited		Not limited	
77:							
Cardenas------	65	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
						Seepage	0.52
Palma---------	25	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
						Seepage	0.09
						Gravel content	0.06
Rock outcrop--	20	Not rated		Not rated		Not rated	

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
80:							
Travessilla---	35	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
						Seepage	0.52
Hagerman------	30	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Not limited		Not limited		Not limited	
Silver--------	30	Not limited		Not limited		Not limited	
82:							
Clovis--------	80	Not limited		Not limited		Not limited	
85:							
Harvey--------	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.04	Slope	0.04	Slope	0.04
Dean----------	40	Not limited		Not limited		Very limited	
						Carbonate content	1.00
86:							
Palma---------	90	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
89:							
Clovis--------	50	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
Pastura-------	40	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
91:							
Pastura-------	60	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00
Harvey--------	25	Not limited		Not limited		Not limited	
92:							
Winona--------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
		Content of large stones	0.48			Carbonate content	1.00
						Content of large stones	0.48
						Gravel content	0.02
Rock outcrop--	20	Not rated		Not rated		Not rated	
93:							
Pastura-------	85	Somewhat limited		Not limited		Very limited	
		Depth to thin cemented pan	0.50			Depth to cemented pan	1.00

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
94:							
Palma---------	85	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
95:							
Flugle--------	90	Not limited		Not limited		Not limited	
96:							
Mido----------	85	Somewhat limited		Not limited		Very limited	
		Too sandy	0.50			Seepage	1.00
						Too sandy	0.50
97:							
Bond----------	50	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Hagerman------	30	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00
98:							
La Fonda------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16	Slope	0.16
Palma---------	30	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
101:							
Mido----------	90	Somewhat limited		Not limited		Very limited	
		Too sandy	0.50			Seepage	1.00
						Too sandy	0.50
105:							
Manzano-------	85	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
106:							
Darvey--------	85	Not limited		Not limited		Not limited	
107:							
Rune----------	85	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
111:							
La Lande------	90	Not limited		Not limited		Not limited	
112:							
Ima-----------	90	Not limited		Not limited		Somewhat limited	
						Seepage	0.52
114:							
Alama---------	90	Not limited		Not limited		Not limited	
116:							
Bluhol--------	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
120:							
Sparks--------	80	Not limited		Not limited		Not limited	

Table 11.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
121:							
Slaughter-----	75	Somewhat limited		Very limited		Very limited	
		Depth to thin cemented pan	0.50	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Too clayey	0.50			Too clayey	0.50
DAM.							
Dam							
W.							
Water							

Table 12.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Restricted permeability	0.41	Slope	1.00	Too steep for sprinkler application	1.00
		Runoff limitation	0.40	Restricted permeability	0.31	Restricted permeability	0.31
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	1.00	Too steep for sprinkler application	1.00
11:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
Hassell-------	40	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Low adsorption	1.00	Restricted permeability	1.00
		Depth to bedrock	0.29	Restricted permeability	1.00	Depth to bedrock	0.29
		Droughty	0.01	Depth to bedrock	0.29	Droughty	0.01
				Droughty	0.01		
13:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
Redona--------	40	Not limited		Not limited		Not limited	
14:							
Kolar---------	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
14:							
Neso----------	25	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		
15:							
Hilken--------	50	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.86	Low adsorption	1.00	Droughty	0.86
		Depth to cemented pan	0.71	Droughty	0.86	Depth to cemented pan	0.71
		Filtering capacity	0.01	Depth to cemented pan	0.71	Filtering capacity	0.01
				Filtering capacity	0.01		
Palo----------	35	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		
16:							
Redona--------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Berwolf-------	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
17:							
Lacoca--------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	1.00	Too steep for sprinkler application	1.00
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Droughty	0.54	Droughty	0.54	Too steep for sprinkler application	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Droughty	0.54
						Filtering capacity	0.01

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
20:							
Walkon	45	Somewhat limited		Very limited		Somewhat limited	
		Restricted permeability	0.41	Low adsorption	1.00	Restricted permeability	0.31
		Depth to bedrock	0.10	Restricted permeability	0.31	Depth to bedrock	0.10
		Filtering capacity	0.01	Depth to bedrock	0.10	Filtering capacity	0.01
				Filtering capacity	0.01		
Newkirk	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Droughty	1.00
		Runoff limitation	0.40	Droughty	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		
San Jon	20	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.50	Low adsorption	1.00	Droughty	0.50
		Depth to bedrock	0.46	Droughty	0.50	Depth to bedrock	0.46
		Filtering capacity	0.01	Depth to bedrock	0.46	Too steep for surface application	0.32
				Filtering capacity	0.01	Filtering capacity	0.01
22:							
Chispa	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
						Filtering capacity	0.01
Redona	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
23:							
Minneosa	85	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
25:							
Ima	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.68
						Filtering capacity	0.01
La Lande	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
						Filtering capacity	0.01

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
26:							
Tucumcari-----	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
Montoya-------	40	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Runoff limitation	0.40	Flooding	0.40	Salinity	0.13
		Salinity	0.01	Salinity	0.13		
27:							
San Jon-------	40	Somewhat limited		Very limited		Somewhat limited	
		Depth to bedrock	0.90	Low adsorption	1.00	Depth to bedrock	0.90
		Droughty	0.88	Depth to bedrock	0.90	Droughty	0.88
				Droughty	0.88		
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Too steep for surface application	0.68
Rock outcrop--	15	Not rated		Not rated		Not rated	
28:							
Lacoca--------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.84	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	0.84	Too steep for sprinkler application	0.90
		Cobble content	0.12	Cobble content	0.12	Cobble content	0.12
San Jon-------	30	Somewhat limited		Very limited		Very limited	
		Slope	0.84	Low adsorption	1.00	Too steep for surface application	1.00
		Restricted permeability	0.41	Slope	0.84	Too steep for sprinkler application	0.90
		Droughty	0.34	Droughty	0.34	Droughty	0.34
		Depth to bedrock	0.20	Restricted permeability	0.31	Restricted permeability	0.31
				Depth to bedrock	0.20	Depth to bedrock	0.20
Rock outcrop--	15	Not rated		Not rated		Not rated	

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
29:							
Pojo----------	45	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Depth to cemented pan	0.99	Low adsorption	1.00	Depth to cemented pan	0.99
				Depth to cemented pan	0.99		
Neso----------	35	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
		Depth to cemented pan	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Cobble content	0.12
		Cobble content	0.12	Cobble content	0.12		
Berwolf-------	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
30:							
La Lande------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Too steep for surface application	1.00
						Too steep for sprinkler application	0.40
Chispa--------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
						Filtering capacity	0.01
32:							
Regnier-------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Low adsorption	1.00	Too steep for surface application	1.00
		Restricted permeability	0.41	Slope	0.63	Too steep for sprinkler application	0.78
		Runoff limitation	0.40	Restricted permeability	0.31	Restricted permeability	0.31

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
32:							
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	1.00	Too steep for sprinkler application	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	
33:							
Redona--------	55	Not limited		Not limited		Not limited	
Hilken--------	30	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.52	Low adsorption	1.00	Droughty	0.52
		Depth to cemented pan	0.15	Droughty	0.52	Depth to cemented pan	0.15
		Filtering capacity	0.01	Depth to cemented pan	0.15	Filtering capacity	0.01
				Filtering capacity	0.01		
34:							
Palo----------	70	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		
Neso----------	20	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Filtering capacity	0.01
		Filtering capacity	0.01	Filtering capacity	0.01		
35:							
Hassell-------	50	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Low adsorption	1.00	Restricted permeability	1.00
		Depth to bedrock	0.03	Restricted permeability	1.00	Depth to bedrock	0.03
				Depth to bedrock	0.03		
Regnier-------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	0.99	Low adsorption	1.00	Droughty	0.99
		Restricted permeability	0.41	Droughty	0.99	Restricted permeability	0.31
		Runoff limitation	0.40	Restricted permeability	0.31		
36:							
Alama---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Restricted permeability	0.37	Restricted permeability	0.37

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
37:							
Hollomex	50	Very limited		Very limited		Very limited	
		Low adsorption	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00	Low adsorption	1.00
						Too steep for surface application	0.92
						Too steep for sprinkler application	0.02
Reeves	25	Very limited		Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00	Droughty	1.00
		Salinity	0.01	Droughty	1.00	Salinity	0.13
		Filtering capacity	0.01	Salinity	0.13	Filtering capacity	0.01
				Filtering capacity	0.01		
50:							
Conger	50	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Low adsorption	1.00		
Hilken	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to cemented pan	0.35	Low adsorption	1.00	Depth to cemented pan	0.35
		Droughty	0.22	Depth to cemented pan	0.35	Droughty	0.22
		Filtering capacity	0.01	Droughty	0.22	Filtering capacity	0.01
				Filtering capacity	0.01		
55:							
Conger	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Droughty	1.00	Low adsorption	1.00	Droughty	1.00
				Droughty	1.00	Too steep for surface application	0.08
Redona	40	Not limited		Not limited		Not limited	
56:							
Karde	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Restricted permeability	0.37	Too steep for surface application	0.92
						Restricted permeability	0.37
						Too steep for sprinkler application	0.02

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
57:							
Tuloso	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Cobble content	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Cobble content	1.00
		Runoff limitation	0.40	Cobble content	1.00	Too steep for surface application	1.00
		Filtering capacity	0.01	Filtering capacity	0.01		
						Too steep for sprinkler application	0.10
Flugle	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
						Filtering capacity	0.01
58:							
Deama	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Low adsorption	1.00	Too steep for surface application	1.00
		Cobble content	0.75	Slope	0.96		
		Runoff limitation	0.40	Cobble content	0.75		
						Too steep for sprinkler application	0.98
						Cobble content	0.75
70:							
Manzano	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Flooding	0.40	Restricted permeability	0.31
				Restricted permeability	0.31		
71:							
Clovis	80	Not limited		Not limited		Not limited	
72:							
Harvey	45	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.08
Darvey	35	Not limited		Not limited		Not limited	
73:							
Winona	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Too steep for surface application	1.00
		Cobble content	0.32	Cobble content	0.32		
		Filtering capacity	0.01	Filtering capacity	0.01		
						Cobble content	0.32
						Too steep for sprinkler application	0.10

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
73:							
Gabaldon------	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Restricted permeability	0.30	Flooding	0.40	Restricted permeability	0.22
				Restricted permeability	0.22		
75:							
Pastura-------	45	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00		
Silver--------	30	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Gabaldon------	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Flooding	0.40	Restricted permeability	0.22
				Restricted permeability	0.22		
76:							
Pastura-------	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Too steep for surface application	0.08
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Clovis--------	20	Not limited		Not limited		Not limited	
77:							
Cardenas------	65	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
		Depth to cemented pan	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00		
Palma---------	25	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Dense layer	1.00				

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Slope	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	1.00	Too steep for sprinkler application	1.00
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Too steep for surface application	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for sprinkler application	0.10
						Filtering capacity	0.01
Hagerman------	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to bedrock	0.06	Low adsorption	1.00	Too steep for surface application	0.68
		Droughty	0.01	Depth to bedrock	0.06	Depth to bedrock	0.06
				Droughty	0.01	Droughty	0.01
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Not limited		Not limited		Not limited	
Silver--------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.89	Restricted permeability	0.78	Restricted permeability	0.78
82:							
Clovis--------	80	Not limited		Not limited		Not limited	
85:							
Harvey--------	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Too steep for surface application	1.00
						Too steep for sprinkler application	0.22

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
85:							
Dean	40	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.92
						Too steep for sprinkler application	0.02
86:							
Palma	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
89:							
Clovis	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Pastura	40	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00		
91:							
Pastura	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00		
Harvey	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.68
						Filtering capacity	0.01
92:							
Winona	70	Very limited		Very limited		Very limited	
		Slope	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	1.00	Too steep for sprinkler application	1.00
		Cobble content	0.32	Cobble content	0.32	Cobble content	0.32
Rock outcrop	20	Not rated		Not rated		Not rated	
93:							
Pastura	85	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Runoff limitation	0.40	Low adsorption	1.00		

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
94:							
Palma	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
95:							
Flugle	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
96:							
Mido	85	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.51	Droughty	0.51	Too steep for surface application	0.68
		Leaching limitation	0.45			Droughty	0.51
97:							
Bond	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Runoff limitation	0.40	Low adsorption	1.00	Too steep for surface application	0.68
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Hagerman	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to bedrock	0.65	Low adsorption	1.00	Too steep for surface application	0.68
		Droughty	0.43	Depth to bedrock	0.65	Depth to bedrock	0.65
				Droughty	0.43	Droughty	0.43
98:							
La Fonda	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Too steep for surface application	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for sprinkler application	0.40
						Filtering capacity	0.01
Palma	30	Somewhat limited		Somewhat limited		Very limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	1.00
						Too steep for sprinkler application	0.10
						Filtering capacity	0.01

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
101:							
Mido	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.50	Droughty	0.50	Droughty	0.50
		Leaching limitation	0.45				
105:							
Manzano	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
106:							
Darvey	85	Not limited		Not limited		Not limited	
107:							
Rune	85	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
111:							
La Lande	90	Not limited		Not limited		Not limited	
112:							
Ima	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
114:							
Alama	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
116:							
Bluhol	90	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Depth to saturated zone	1.00	Low adsorption	1.00	Depth to saturated zone	1.00
		Low adsorption	0.97	Depth to saturated zone	1.00	Low adsorption	0.97
		Runoff limitation	0.40	Salinity	0.50	Salinity	0.50
		Salinity	0.06				
120:							
Sparks	80	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
121:							
Slaughter	75	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Droughty	1.00	Low adsorption	1.00	Droughty	1.00
		Restricted permeability	0.41	Droughty	1.00	Restricted permeability	0.31
				Restricted permeability	0.31		

Table 12.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Application of manure and food-processing waste: Value	Application of sewage sludge: Rating class and limiting features	Application of sewage sludge: Value	Disposal of wastewater by irrigation: Rating class and limiting features	Disposal of wastewater by irrigation: Value
DAM.							
Dam							
W.							
Water							

Table 12.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
10:							
Regnier---------	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00	Too steep for sprinkler application	1.00
						Restricted permeability	0.21
Rock outcrop----	30	Not rated		Not rated		Not rated	
Lacoca----------	20	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
11:							
Tucumcari-------	50	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.69	Restricted permeability	1.00	Restricted permeability	0.21
Hassell---------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Seepage	0.69	Depth to bedrock	1.00	Restricted permeability	0.96
13:							
Tucumcari-------	50	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.21
Redona----------	40	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
14:							
Kolar-----------	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	0.31	Filtering capacity	0.01
Neso------------	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	0.31	Filtering capacity	0.01

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
15:							
Hilken----------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Filtering capacity	0.01
Palo------------	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Filtering capacity	0.01
16:							
Redona----------	50	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Filtering capacity	0.01
Berwolf---------	40	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	0.01
17:							
Lacoca----------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Rock outcrop----	30	Not rated		Not rated		Not rated	
19:							
Gallen----------	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
						Filtering capacity	0.01
20:							
Walkon----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Restricted permeability	0.21
						Filtering capacity	0.01
Newkirk---------	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Filtering capacity	0.01

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
20:							
San Jon	20	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	0.32
				Slope	0.12	Filtering capacity	0.01
22:							
Chispa	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
Redona	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Filtering capacity	0.01
23:							
Minneosa	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	0.01
25:							
Ima	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50	Filtering capacity	0.01
La Lande	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
26:							
Tucumcari	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.21
Montoya	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Restricted permeability	1.00	Ponding	1.00
		Seepage	0.69	Ponding	1.00	Restricted permeability	0.96
		Flooding	0.40			Salinity	0.13
27:							
San Jon	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00		

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
27:							
Lacoca	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
28:							
Lacoca	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Slope	1.00	Too steep for sprinkler application	1.00
				Cobble content	0.12	Cobble content	0.12
San Jon	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Slope	1.00	Too steep for sprinkler application	1.00
						Restricted permeability	0.21
Rock outcrop	15	Not rated		Not rated		Not rated	
29:							
Pojo	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Filtering capacity	1.00
		Depth to cemented pan	1.00	Restricted permeability	0.31	Depth to cemented pan	1.00
Neso	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Filtering capacity	1.00
		Depth to cemented pan	1.00	Cobble content	0.89	Depth to cemented pan	1.00
				Restricted permeability	0.31	Cobble content	0.12
Berwolf	15	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	0.01
30:							
La Lande	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.78	Slope	1.00	Too steep for sprinkler application	0.78

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
30:							
Chispa----------	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
32:							
Regnier---------	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Slope	1.00	Too steep for sprinkler application	1.00
						Restricted permeability	0.21
Lacoca----------	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
Rock outcrop----	15	Not rated		Not rated		Not rated	
33:							
Redona----------	55	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
		Too level	0.50				
Hilken----------	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Filtering capacity	0.01
34:							
Palo------------	70	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Filtering capacity	0.01
Neso------------	20	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	0.31	Filtering capacity	0.01
35:							
Hassell---------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Seepage	0.69	Depth to bedrock	1.00	Restricted permeability	0.96

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
35:							
Regnier	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Seepage	0.69	Depth to bedrock	1.00	Restricted permeability	0.21
36:							
Alama	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.26
37:							
Hollomex	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Low adsorption	1.00
		Low adsorption	1.00	Slope	0.88	Too steep for surface application	0.92
		Too steep for surface application	0.06			Too steep for sprinkler application	0.06
Reeves	25	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Salinity	0.13
						Filtering capacity	0.01
50:							
Conger	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00		
Hilken	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Filtering capacity	0.01
55:							
Conger	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
Redona	40	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
56:							
Karde	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.92
		Too steep for surface application	0.06	Slope	0.88	Restricted permeability	0.26
						Too steep for sprinkler application	0.06

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
57:							
Tuloso----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Cobble content	1.00	Cobble content	1.00
		Cobble content	0.53	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.22	Restricted permeability	0.31	Too steep for sprinkler application	0.22
						Filtering capacity	0.01
Flugle----------	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
58:							
Deama-----------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Cobble content	1.00	Too steep for sprinkler application	1.00
		Cobble content	0.28	Slope	1.00	Cobble content	0.75
70:							
Manzano---------	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.21
		Flooding	0.40				
71:							
Clovis----------	80	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
72:							
Harvey----------	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
Darvey----------	35	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
73:							
Winona	65	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.22	Slope	1.00	Cobble content	0.32
		Cobble content	0.06	Cobble content	1.00	Too steep for sprinkler application	0.22
						Filtering capacity	0.01
Gabaldon	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Restricted permeability	1.00	Ponding	1.00
		Seepage	0.77	Ponding	1.00	Restricted permeability	0.15
		Too level	0.50				
		Flooding	0.40				
75:							
Pastura	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00		
Silver	30	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.96
Gabaldon	15	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.77	Restricted permeability	1.00	Restricted permeability	0.15
		Too level	0.50				
		Flooding	0.40				
76:							
Pastura	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
Clovis	20	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
77:							
Cardenas	65	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Filtering capacity	1.00
		Depth to cemented pan	1.00	Restricted permeability	0.31	Depth to cemented pan	1.00
Palma	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	1.00

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
79:							
Travessilla-----	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	0.78	Too steep for sprinkler application	1.00
Rock outcrop----	20	Not rated		Not rated		Not rated	
80:							
Travessilla-----	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.22	Restricted permeability	0.31	Too steep for sprinkler application	0.22
						Filtering capacity	0.01
Hagerman--------	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50		
Rock outcrop----	20	Not rated		Not rated		Not rated	
81:							
Darvey----------	60	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
Silver----------	30	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.60
82:							
Clovis----------	80	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
85:							
Harvey----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.50	Slope	1.00	Too steep for sprinkler application	0.50

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
85:							
Dean	40	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.92
		Too steep for surface application	0.06	Slope	0.88	Too steep for sprinkler application	0.06
86:							
Palma	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	1.00
89:							
Clovis	50	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Filtering capacity	0.01
Pastura	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00		
91:							
Pastura	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00		
Harvey	25	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50	Filtering capacity	0.01
92:							
Winona	70	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
		Cobble content	0.17	Cobble content	1.00	Cobble content	0.32
						Filtering capacity	0.01
Rock outcrop	20	Not rated		Not rated		Not rated	
93:							
Pastura	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Restricted permeability	1.00		

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
94:							
Palma-----------	85	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	0.01
95:							
Flugle----------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Filtering capacity	1.00
96:							
Mido------------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slope	0.50	Filtering capacity	1.00
						Too steep for surface application	0.68
97:							
Bond------------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50	Filtering capacity	0.01
Hagerman--------	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Too steep for surface application	0.68
				Slope	0.50		
98:							
La Fonda--------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.78	Slope	1.00	Too steep for sprinkler application	0.78
						Filtering capacity	0.01
Palma-----------	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.22	Restricted permeability	0.31	Too steep for sprinkler application	0.22
						Filtering capacity	0.01
101:							
Mido------------	90	Very limited		Not limited		Very limited	
		Seepage	1.00			Filtering capacity	1.00
		Too level	0.50				

Table 12.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater: Rating class and limiting features	Value	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
105:							
Manzano	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.21
106:							
Darvey	85	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
107:							
Rune	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.69	Restricted permeability	1.00	Restricted permeability	1.00
		Too level	0.50				
111:							
La Lande	90	Very limited		Very limited		Not limited	
		Seepage	1.00	Restricted permeability	1.00		
112:							
Ima	90	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	0.31	Filtering capacity	0.01
114:							
Alama	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.21
		Too level	0.50				
116:							
Bluhol	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Restricted permeability	1.00	Low adsorption	0.97
		Low adsorption	0.97			Salinity	0.50
120:							
Sparks	80	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Restricted permeability	1.00	Restricted permeability	0.96
121:							
Slaughter	75	Very limited		Very limited		Very limited	
		Seepage	1.00	Restricted permeability	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Restricted permeability	0.21
DAM.							
Dam							
W.							
Water							

Table 13.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
10:					
Regnier	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	30	Not rated		Not rated	
Lacoca	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
11:					
Tucumcari	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hassell	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13:					
Tucumcari	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Redona	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14:					
Kolar	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Neso	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
15:					
Hilken	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Palo	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
16:					
Redona--------------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Berwolf-------------	40	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
17:					
Lacoca--------------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	30	Not rated		Not rated	
19:					
Gallen--------------	80	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
20:					
Walkon--------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Newkirk-------------	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
San Jon-------------	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
22:					
Chispa--------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Redona--------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
23:					
Minneosa------------	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
25:					
Ima-----------------	45	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.02
La Lande------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
26:					
Tucumcari	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Montoya	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
27:					
San Jon	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Lacoca	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
28:					
Lacoca	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
San Jon	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
29:					
Pojo	45	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.02
Neso	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Berwolf	15	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
30:					
La Lande	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Chispa	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
32:					
Regnier	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
32:					
Lacoca	30	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
Rock outcrop	15	Not rated		Not rated	
33:					
Redona	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hilken	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
34:					
Palo	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Neso	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
35:					
Hassell	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Regnier	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
36:					
Alama	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
37:					
Hollomex	50	Not rated		Not rated	
Reeves	25	Not rated		Not rated	
50:					
Conger	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hilken	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
55:					
Conger	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
55:					
Redona	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
56:					
Karde	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
57:					
Tuloso	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Flugle	35	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
58:					
Deama	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
70:					
Manzano	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
71:					
Clovis	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
72:					
Harvey	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Darvey	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
73:					
Winona	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Gabaldon	15	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
75:					
Pastura	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Silver	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
75:					
Gabaldon------------	15	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
76:					
Pastura-------------	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Clovis--------------	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
77:					
Cardenas------------	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Palma---------------	25	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
79:					
Travessilla---------	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	20	Not rated		Not rated	
80:					
Travessilla---------	35	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Hagerman------------	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	20	Not rated		Not rated	
81:					
Darvey--------------	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Silver--------------	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
82:					
Clovis--------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
85:					
Harvey--------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
85:					
Dean----------------	40	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.03
86:					
Palma---------------	90	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
89:					
Clovis--------------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pastura-------------	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
91:					
Pastura-------------	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Harvey--------------	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
92:					
Winona--------------	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	20	Not rated		Not rated	
93:					
Pastura-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
94:					
Palma---------------	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
95:					
Flugle--------------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
96:					
Mido----------------	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.02
97:					
Bond----------------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
97:					
Hagerman------------	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
98:					
La Fonda------------	50	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.02
Palma---------------	30	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
101:					
Mido----------------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.02
105:					
Manzano-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
106:					
Darvey--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
107:					
Rune----------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
111:					
La Lande------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
112:					
Ima-----------------	90	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.02
		Thickest layer	0.00	Thickest layer	0.02
114:					
Alama---------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
116:					
Bluhol--------------	90	Not rated		Not rated	
120:					
Sparks--------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Potential source of gravel: Value	Potential source of sand: Rating class	Potential source of sand: Value
121:					
Slaughter----------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DAM.					
Dam					
W.					
Water					

Table 13.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
10:							
Regnier--------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.18	Low strength	0.00	Rock fragments	0.88
		Carbonate content	0.92	Shrink-swell	0.97	Carbonate content	0.92
		Water erosion	0.99				
Rock outcrop---	30	Not rated		Not rated		Not rated	
Lacoca---------	20	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.88	Low strength	0.00	Carbonate content	0.97
		Carbonate content	0.97				
11:							
Tucumcari------	50	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.50	Shrink-swell	0.87	Carbonate content	0.92
		Carbonate content	0.92				
Hassell--------	40	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Low strength	0.00	Depth to bedrock	0.71
		Carbonate content	0.68	Shrink-swell	0.12		
		Depth to bedrock	0.71				
		Water erosion	0.99				
		Droughty	0.99				
13:							
Tucumcari------	50	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.50	Shrink-swell	0.87	Carbonate content	0.92
		Carbonate content	0.92				
		Water erosion	0.99				
Redona---------	40	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
		Carbonate content	0.68	Shrink-swell	0.87		
		Water erosion	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
14:							
Kolar----------	55	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Too sandy	0.98
		Low content of organic matter	0.88				
		Too sandy	0.98				
Neso-----------	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Rock fragments	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00			Carbonate content	0.00
		Low content of organic matter	0.88				
15:							
Hilken---------	50	Fair		Poor		Fair	
		Droughty	0.14	Depth to cemented pan	0.00	Depth to cemented pan	0.29
		Depth to cemented pan	0.29	Low strength	0.00		
		Low content of organic matter	0.50	Shrink-swell	0.87		
		Carbonate content	0.68				
Palo-----------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Rock fragments	0.97
		Low content of organic matter	0.18	Shrink-swell	0.87		
16:							
Redona---------	50	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Too clayey	0.54
		Carbonate content	0.68	Shrink-swell	0.87		
		Too clayey	0.82				
Berwolf--------	40	Fair		Poor		Good	
		Carbonate content	0.68	Low strength	0.00		
		Low content of organic matter	0.88				
17:							
Lacoca---------	50	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00	Slope	0.00
		Low content of organic matter	0.88	Slope	0.82		
Rock outcrop---	30	Not rated		Not rated		Not rated	
19:							
Gallen---------	80	Fair		Poor		Poor	
		Low content of organic matter	0.18	Low strength	0.00	Hard to reclaim	0.00
		Carbonate content	0.32	Slope	0.82	Rock fragments	0.00
		Droughty	0.46			Slope	0.00
						Carbonate content	0.32

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
20:							
Walkon----------	45	Fair		Poor		Fair	
		Low content of organic matter	0.50	Depth to bedrock	0.00	Depth to bedrock	0.90
		Depth to bedrock	0.90	Low strength	0.00		
				Shrink-swell	0.87		
Newkirk---------	25	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.00	Low strength	0.00		
		Low content of organic matter	0.18	Shrink-swell	0.87		
San Jon---------	20	Fair		Poor		Fair	
		Droughty	0.50	Depth to bedrock	0.00	Depth to bedrock	0.54
		Depth to bedrock	0.54	Low strength	0.00		
		Carbonate content	0.68				
		Low content of organic matter	0.88				
22:							
Chispa----------	45	Fair		Poor		Fair	
		Low content of organic matter	0.08	Low strength	0.00	Carbonate content	0.32
		Carbonate content	0.32				
Redona----------	35	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Too clayey	0.54
		Carbonate content	0.68	Shrink-swell	0.87		
		Too clayey	0.82				
23:							
Minneosa--------	85	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Too sandy	0.36
		Too sandy	0.36				
		Water erosion	0.37				
25:							
Ima-------------	45	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Too sandy	0.99
		Too sandy	0.99				
La Lande--------	35	Fair		Poor		Good	
		Low content of organic matter	0.32	Low strength	0.00		
		Water erosion	0.99	Shrink-swell	0.87		
26:							
Tucumcari-------	45	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Low content of organic matter	0.18	Shrink-swell	0.55		
		Carbonate content	0.92				
		Water erosion	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
26:							
Montoya--------	40	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.88	Shrink-swell	0.12	Salinity	0.88
		Water erosion	0.99				
27:							
San Jon--------	40	Fair		Poor		Fair	
		Depth to bedrock	0.10	Depth to bedrock	0.00	Depth to bedrock	0.10
		Droughty	0.12	Low strength	0.00	Carbonate content	0.68
		Low content of organic matter	0.50				
		Carbonate content	0.68				
		Water erosion	0.99				
Lacoca---------	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00		
		Low content of organic matter	0.88				
Rock outcrop---	15	Not rated		Not rated		Not rated	
28:							
Lacoca---------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00	Rock fragments	0.12
		Low content of organic matter	0.88			Slope	0.16
San Jon--------	30	Fair		Poor		Fair	
		Low content of organic matter	0.18	Depth to bedrock	0.00	Slope	0.16
				Low strength	0.00	Carbonate content	0.68
		Droughty	0.66	Shrink-swell	0.87	Rock fragments	0.72
		Carbonate content	0.68			Depth to bedrock	0.79
		Depth to bedrock	0.79				
		Water erosion	0.99				
Rock outcrop---	15	Not rated		Not rated		Not rated	
29:							
Pojo-----------	45	Poor		Poor		Fair	
		Wind erosion	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.01
		Droughty	0.00	Low strength	0.00	Too sandy	0.98
		Depth to cemented pan	0.01				
		Low content of organic matter	0.18				
		Too sandy	0.98				
Neso-----------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Rock fragments	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00			Carbonate content	0.00
		Low content of organic matter	0.88				
		Cobble content	0.91				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
29:							
Berwolf	15	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Carbonate content	0.68				
		Low content of organic matter	0.88				
30:							
La Lande	50	Fair		Poor		Fair	
		Low content of organic matter	0.18	Low strength	0.00	Slope	0.84
		Water erosion	0.99				
Chispa	35	Fair		Poor		Fair	
		Low content of organic matter	0.08	Low strength	0.00	Carbonate content	0.32
		Carbonate content	0.32				
32:							
Regnier	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00	Slope	0.37
		Low content of organic matter	0.88	Shrink-swell	0.87	Rock fragments	0.97
		Carbonate content	0.92				
		Water erosion	0.99				
Lacoca	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00	Slope	0.00
		Low content of organic matter	0.88	Slope	0.98		
		Carbonate content	0.92				
Rock outcrop	15	Not rated		Not rated		Not rated	
33:							
Redona	55	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Too clayey	0.54
				Shrink-swell	0.87		
		Carbonate content	0.68				
		Too clayey	0.82				
		Water erosion	0.99				
Hilken	30	Fair		Poor		Fair	
		Water erosion	0.37	Depth to cemented pan	0.00	Depth to cemented pan	0.85
		Droughty	0.48				
		Low content of organic matter	0.50	Low strength	0.00		
				Shrink-swell	0.87		
		Carbonate content	0.68				
		Depth to cemented pan	0.85				
34:							
Palo	70	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Rock fragments	0.97
		Low content of organic matter	0.18	Shrink-swell	0.87		

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
34:							
Neso-----------	20	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Rock fragments	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00			Carbonate content	0.00
		Low content of organic matter	0.88				
35:							
Hassell--------	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Low strength	0.00	Carbonate content	0.68
		Carbonate content	0.68	Shrink-swell	0.16	Depth to bedrock	0.97
		Depth to bedrock	0.97				
		Water erosion	0.99				
Regnier--------	35	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.01	Low strength	0.00	Too clayey	0.69
		Low content of organic matter	0.88	Shrink-swell	0.87	Rock fragments	0.97
		Carbonate content	0.92				
		Too clayey	0.95				
36:							
Alama----------	90	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Water erosion	0.90	Shrink-swell	0.87		
37:							
Hollomex-------	50	Not rated		Poor		Not rated	
				Low strength	0.00		
Reeves---------	25	Fair		Poor		Fair	
		Low content of organic matter	0.01	Low strength	0.00	Salinity	0.88
		Carbonate content	0.92			Carbonate content	0.92
		Water erosion	0.99				
50:							
Conger---------	50	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00		
		Water erosion	0.99				
Hilken---------	35	Fair		Poor		Fair	
		Water erosion	0.37	Depth to cemented pan	0.00	Depth to cemented pan	0.65
		Low content of organic matter	0.50	Low strength	0.00	Carbonate content	0.68
		Depth to cemented pan	0.65	Shrink-swell	0.87		
		Carbonate content	0.68				
		Droughty	0.78				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
55:							
Conger	55	Poor		Poor		Poor	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Droughty	0.00	Low strength	0.00		
		Water erosion	0.99				
Redona	40	Fair		Poor		Fair	
		Low content of organic matter	0.08	Low strength	0.00	Too clayey	0.60
		Carbonate content	0.68	Shrink-swell	0.87		
		Too clayey	0.92				
		Water erosion	0.99				
56:							
Karde	85	Poor		Poor		Fair	
		Too alkaline	0.00	Low strength	0.00	Too clayey	0.39
		Low content of organic matter	0.02	Shrink-swell	0.87	Carbonate content	0.68
		Carbonate content	0.08				
		Too clayey	0.68				
		Water erosion	0.99				
57:							
Tuloso	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
		Cobble content	0.01	Cobble content	0.47	Too sandy	0.99
		Low content of organic matter	0.50				
		Too sandy	0.99				
Flugle	35	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
		Water erosion	0.99				
58:							
Deama	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Carbonate content	0.00	Low strength	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Cobble content	0.72	Depth to bedrock	0.00
		Cobble content	0.64			Slope	0.04
70:							
Manzano	85	Fair		Poor		Good	
		Low content of organic matter	0.50	Low strength	0.00		
		Water erosion	0.99	Shrink-swell	0.89		
71:							
Clovis	80	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Carbonate content	0.92	Shrink-swell	0.87		
		Water erosion	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
72:							
Harvey----------	45	Fair		Poor		Fair	
		Carbonate content	0.08	Low strength	0.00	Carbonate content	0.32
		Low content of organic matter	0.50	Shrink-swell	0.87		
		Water erosion	0.99				
Darvey----------	35	Fair		Poor		Good	
		Carbonate content	0.16	Low strength	0.00		
		Low content of organic matter	0.18	Shrink-swell	0.87		
		Water erosion	0.99				
73:							
Winona----------	65	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Carbonate content	0.00	Low strength	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Cobble content	0.94	Depth to bedrock	0.00
		Low content of organic matter	0.50				
		Cobble content	0.72				
Gabaldon--------	15	Fair		Poor		Good	
		Low content of organic matter	0.08	Low strength	0.00		
				Shrink-swell	0.87		
		Water erosion	0.90				
75:							
Pastura---------	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Rock fragments	0.28
		Low content of organic matter	0.50			Carbonate content	0.68
		Carbonate content	0.68				
		Water erosion	0.99				
Silver----------	30	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Shrink-swell	0.12		
		Water erosion	0.99				
Gabaldon--------	15	Fair		Poor		Good	
		Low content of organic matter	0.08	Low strength	0.00		
				Shrink-swell	0.89		
		Water erosion	0.90				
76:							
Pastura---------	60	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Rock fragments	0.28
		Carbonate content	0.32	Shrink-swell	0.87	Carbonate content	0.32
		Low content of organic matter	0.50				
Clovis----------	20	Fair		Poor		Fair	
		Low content of organic matter	0.08	Low strength	0.00	Carbonate content	0.68
				Shrink-swell	0.87		
		Carbonate content	0.68				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
77:							
Cardenas-------	65	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Droughty	0.00	Low strength	0.00	Carbonate content	0.68
		Depth to cemented pan	0.00			Rock fragments	0.88
		Low content of organic matter	0.50			Too sandy	0.99
		Carbonate content	0.68				
		Too sandy	0.99				
Palma----------	25	Poor		Poor		Fair	
		Wind erosion	0.00	Low strength	0.00	Carbonate content	0.97
		Low content of organic matter	0.05				
		Carbonate content	0.97				
79:							
Travessilla----	60	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.50	Low strength	0.00	Rock fragments	0.00
		Carbonate content	0.92			Carbonate content	0.92
Rock outcrop---	20	Not rated		Not rated		Not rated	
80:							
Travessilla----	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00	Carbonate content	0.92
		Carbonate content	0.68				
		Water erosion	0.99				
Hagerman-------	30	Fair		Poor		Fair	
		Low content of organic matter	0.12	Depth to bedrock	0.00	Depth to bedrock	0.93
		Depth to bedrock	0.93	Low strength	0.00		
		Water erosion	0.99	Shrink-swell	0.87		
		Droughty	0.99				
Rock outcrop---	20	Not rated		Not rated		Not rated	
81:							
Darvey---------	60	Fair		Poor		Good	
		Carbonate content	0.16	Low strength	0.00		
		Low content of organic matter	0.18	Shrink-swell	0.87		
		Water erosion	0.99				
Silver---------	30	Fair		Poor		Fair	
		Low content of organic matter	0.02	Low strength	0.00	Too clayey	0.21
		Too clayey	0.32	Shrink-swell	0.12		
		Water erosion	0.90				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
82:							
Clovis	80	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
		Carbonate content	0.68				
		Water erosion	0.99				
85:							
Harvey	45	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Carbonate content	0.68
		Carbonate content	0.68	Shrink-swell	0.87	Slope	0.96
		Water erosion	0.99				
Dean	40	Poor		Poor		Poor	
		Carbonate content	0.00	Low strength	0.00	Rock fragments	0.00
		Water erosion	0.99			Carbonate content	0.00
86:							
Palma	90	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Low content of organic matter	0.18				
		Carbonate content	0.97				
89:							
Clovis	50	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
		Carbonate content	0.68				
		Water erosion	0.90				
Pastura	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00		
		Carbonate content	0.68	Shrink-swell	0.87		
		Water erosion	0.99				
91:							
Pastura	60	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Rock fragments	0.28
		Low content of organic matter	0.50	Shrink-swell	0.87		
		Water erosion	0.99				
Harvey	25	Fair		Poor		Fair	
		Carbonate content	0.32	Low strength	0.00	Carbonate content	0.32
		Low content of organic matter	0.50	Shrink-swell	0.87	Too clayey	0.60
		Too clayey	0.92				
		Water erosion	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
92:							
Winona----------	70	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Carbonate content	0.00	Low strength	0.00	Carbonate content	0.00
		Depth to bedrock	0.00	Slope	0.08	Depth to bedrock	0.00
		Low content of organic matter	0.50	Cobble content	0.83	Rock fragments	0.00
		Cobble content	0.66				
Rock outcrop---	20	Not rated		Not rated		Not rated	
93:							
Pastura---------	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00		
		Carbonate content	0.92	Shrink-swell	0.87		
		Water erosion	0.99				
94:							
Palma-----------	85	Fair		Poor		Good	
		Low content of organic matter	0.05	Low strength	0.00		
		Carbonate content	0.97				
95:							
Flugle----------	90	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Low content of organic matter	0.32				
		Water erosion	0.99				
96:							
Mido------------	85	Poor		Poor		Fair	
		Wind erosion	0.00	Low strength	0.00	Too sandy	0.41
		Low content of organic matter	0.18				
		Too sandy	0.41				
		Droughty	0.49				
97:							
Bond------------	50	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00		
		Low content of organic matter	0.18	Shrink-swell	0.87		
Hagerman--------	30	Fair		Poor		Fair	
		Low content of organic matter	0.12	Depth to bedrock	0.00	Depth to bedrock	0.35
				Low strength	0.00		
		Depth to bedrock	0.35	Shrink-swell	0.87		
		Droughty	0.57				
		Water erosion	0.99				
98:							
La Fonda--------	50	Fair		Poor		Fair	
		Low content of organic matter	0.32	Low strength	0.00	Slope	0.84
				Shrink-swell	0.96	Too sandy	0.99
		Too sandy	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
98:							
Palma----------	30	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
		Carbonate content	0.97				
101:							
Mido-----------	90	Poor		Poor		Fair	
		Wind erosion	0.00	Low strength	0.00	Too sandy	0.41
		Low content of organic matter	0.18				
		Too sandy	0.41				
		Droughty	0.50				
105:							
Manzano--------	85	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
				Shrink-swell	0.87		
		Water erosion	0.99				
106:							
Darvey---------	85	Fair		Poor		Good	
		Carbonate content	0.16	Low strength	0.00		
		Low content of organic matter	0.88	Shrink-swell	0.87		
		Water erosion	0.99				
107:							
Rune-----------	85	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.02
				Shrink-swell	0.23		
111:							
La Lande-------	90	Fair		Poor		Good	
		Low content of organic matter	0.82	Low strength	0.00		
		Water erosion	0.99				
112:							
Ima------------	90	Fair		Poor		Good	
		Low content of organic matter	0.02	Low strength	0.00		
114:							
Alama----------	90	Fair		Poor		Good	
		Low content of organic matter	0.18	Low strength	0.00		
				Shrink-swell	0.87		
		Water erosion	0.90				
116:							
Bluhol---------	90	Not rated		Poor		Not rated	
				Low strength	0.00		
				Depth to saturated zone	0.53		

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
120:							
Sparks----------	80	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Carbonate content	0.32	Shrink-swell	0.87		
		Low content of organic matter	0.82				
		Water erosion	0.99				
121:							
Slaughter-------	75	Poor		Poor		Poor	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Droughty	0.00	Low strength	0.00	Too clayey	0.01
		Too clayey	0.02	Shrink-swell	0.87		
		Low content of organic matter	0.50				
		Water erosion	0.99				
DAM.							
Dam							
W.							
Water							

Table 14.—Water Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
10:							
Regnier-------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.78	Piping	0.61		
Rock outcrop--	30	Not rated		Not rated		Not rated	
Lacoca--------	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.88				
11:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Piping	0.01	Depth to water	1.00
Hassell-------	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.08	Thin layer	0.81	Depth to water	1.00
				Hard to pack	0.53		
13:							
Tucumcari-----	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Piping	0.03	Depth to water	1.00
Redona--------	40	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
14:							
Kolar---------	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Seepage	0.02		
Neso----------	25	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Seepage	0.01		
15:							
Hilken--------	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.93	Thin layer	0.93	Depth to water	1.00
		Seepage	0.72				
Palo----------	35	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
16:							
Redona--------	50	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
Berwolf-------	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
17:							
Lacoca--------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.08				
Rock outcrop--	30	Not rated		Not rated		Not rated	
19:							
Gallen--------	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.03	Depth to water	1.00
		Slope	0.08				
20:							
Walkon--------	45	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.69	Thin layer	0.70	Depth to water	1.00
		Seepage	0.46	Piping	0.70		
Newkirk-------	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.46	Piping	1.00		
San Jon-------	20	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.11				
22:							
Chispa--------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.17	Depth to water	1.00
Redona--------	35	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
23:							
Minneosa------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
25:							
Ima-----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.02		
La Lande------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.09	Depth to water	1.00
26:							
Tucumcari-----	45	Somewhat limited		Not limited		Very limited	
		Seepage	0.04			Depth to water	1.00
Montoya-------	40	Not limited		Very limited		Very limited	
				Ponding	1.00	Depth to water	1.00
				Hard to pack	0.28		
27:							
San Jon-------	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.30	Piping	0.93		

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
27:							
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
Rock outcrop--	15	Not rated		Not rated		Not rated	
28:							
Lacoca--------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.46				
		Slope	0.01				
San Jon-------	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.45	Piping	0.95	Depth to water	1.00
		Depth to bedrock	0.06	Thin layer	0.77		
		Slope	0.01				
Rock outcrop--	15	Not rated		Not rated		Not rated	
29:							
Pojo----------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to cemented pan	1.00	Seepage	0.02		
Neso----------	35	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Content of large stones	0.13		
				Seepage	0.03		
Berwolf-------	15	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
30:							
La Lande------	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.81	Depth to water	1.00
Chispa--------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.28	Depth to water	1.00
32:							
Regnier-------	40	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.78	Thin layer	1.00	Depth to water	1.00
		Seepage	0.01	Piping	0.78		
		Slope	0.01				
Lacoca--------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.04	Seepage	0.02		
Rock outcrop--	15	Not rated		Not rated		Not rated	
33:							
Redona--------	55	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
Hilken--------	30	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.74	Thin layer	0.74	Depth to water	1.00
		Seepage	0.72				

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
33:							
Redona	55	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
Hilken	30	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.74	Thin layer	0.74	Depth to water	1.00
		Seepage	0.72				
34:							
Palo	70	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
Neso	20	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Seepage	0.01		
35:							
Hassell	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.02	Thin layer	0.61	Depth to water	1.00
		Seepage	0.01	Hard to pack	0.41		
Regnier	35	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.53	Thin layer	1.00	Depth to water	1.00
		Seepage	0.01	Piping	0.23		
36:							
Alama	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Piping	0.53	Depth to water	1.00
37:							
Hollomex	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
		Seepage	0.53				
Reeves	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
		Seepage	0.72				
50:							
Conger	50	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	1.00		
Hilken	35	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.83	Thin layer	0.83	Depth to water	1.00
				Piping	0.74		
		Seepage	0.72				
55:							
Conger	55	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	1.00		
Redona	40	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
56:							
Karde	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.28	Depth to water	1.00

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
57:							
Tuloso--------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.53	Content of large stones	1.00		
				Seepage	0.02		
Flugle--------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Seepage	0.01	Depth to water	1.00
58:							
Deama---------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.46	Content of large stones	0.36		
		Slope	0.02				
70:							
Manzano-------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.48	Depth to water	1.00
71:							
Clovis--------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.16	Depth to water	1.00
72:							
Harvey--------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.14	Depth to water	1.00
Darvey--------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.55	Depth to water	1.00
73:							
Winona--------	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.46	Content of large stones	0.41		
Gabaldon------	15	Somewhat limited		Very limited		Very limited	
		Seepage	0.05	Ponding	1.00	Depth to water	1.00
				Piping	0.53		
75:							
Pastura-------	45	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.65		
Silver--------	30	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.48	Depth to water	1.00
Gabaldon------	15	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.05	Piping	0.05	Depth to water	1.00
76:							
Pastura-------	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.99		
76:							
Clovis--------	20	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.02	Depth to water	1.00

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
77:							
Cardenas------	65	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Seepage	0.02		
Palma---------	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
79:							
Travessilla---	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00				
		Seepage	0.53				
Rock outcrop--	20	Not rated		Not rated		Not rated	
80:							
Travessilla---	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.53	Seepage	0.01		
Hagerman------	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Thin layer	0.66	Depth to water	1.00
		Depth to bedrock	0.66	Piping	0.59		
Rock outcrop--	20	Not rated		Not rated		Not rated	
81:							
Darvey--------	60	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.53	Depth to water	1.00
Silver--------	30	Somewhat limited		Not limited		Very limited	
		Seepage	0.01			Depth to water	1.00
82:							
Clovis--------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Piping	1.00	Depth to water	1.00
85:							
Harvey--------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.35	Depth to water	1.00
Dean----------	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.91	Depth to water	1.00
				Seepage	0.03		
86:							
Palma---------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
89:							
Clovis--------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
Pastura-------	40	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.73		
		Seepage	0.53				

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
91:							
Pastura	60	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.63		
		Seepage	0.53				
Harvey	25	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.18	Depth to water	1.00
92:							
Winona	70	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.45	Content of large stones	0.48		
		Slope	0.21				
Rock outcrop	20	Not rated		Not rated		Not rated	
93:							
Pastura	85	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.76		
		Seepage	0.53				
94:							
Palma	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
95:							
Flugle	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
96:							
Mido	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
97:							
Bond	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.46	Piping	0.78		
Hagerman	30	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	Depth to water	1.00
		Seepage	0.72	Piping	0.62		
98:							
La Fonda	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.60	Depth to water	1.00
				Seepage	0.02		
98:							
Palma	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
101:							
Mido	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
105:							
Manzano	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.10	Depth to water	1.00

Table 14.—Water Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
106:							
Darvey--------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.58	Depth to water	1.00
107:							
Rune----------	85	Not limited		Not limited		Very limited	
						Depth to water	1.00
111:							
La Lande------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.75	Depth to water	1.00
112:							
Ima-----------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
114:							
Alama---------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Piping	0.56	Depth to water	1.00
116:							
Bluhol--------	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Piping	1.00	Slow refill	0.30
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	0.10
						Salty water	0.06
						Depth to water	0.01
120:							
Sparks--------	80	Somewhat limited		Not limited		Very limited	
		Seepage	0.04			Depth to water	1.00
121:							
Slaughter-----	75	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Thin layer	1.00	Depth to water	1.00
DAM.							
Dam							
W.							
Water							

Table 14.—Water Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10:							
Regnier--------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00			Excess sodium	0.05
		Slopes, sprinkler irrigation	1.00	Droughty	1.00		
				Slopes, sprinkler irrigation	1.00		
		Slope	1.00				
		Percs slowly	0.31	Water erodibility	1.00		
				Excess sodium	0.05		
Rock outcrop---	30	Not rated		Not rated		Not rated	
Lacoca---------	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00				
		Slopes, sprinkler irrigation	1.00	Droughty	1.00		
				Slopes, sprinkler irrigation	1.00		
		Slope	1.00				
11:							
Tucumcari------	50	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.31				
Hassell--------	40	Very limited		Very limited		Not limited	
		Percs slowly	1.00	Water erodibility	1.00		
		Depth to bedrock	0.29	Depth to soft bedrock	0.97		
		Droughty	0.01				
				Droughty	0.01		
13:							
Tucumcari------	50	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.31				
Redona---------	40	Not limited		Very limited		Not limited	
				Water erodibility	1.00		
14:							
Kolar----------	55	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
Neso-----------	25	Very limited		Very limited		Very limited	
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Droughty	1.00	Droughty	1.00		
15:							
Hilken---------	50	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.91	Droughty	1.00	Cemented pan	0.71
		Cemented pan	0.71	Cemented pan	1.00		
Palo-----------	35	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
16:							
Redona	50	Not limited		Not limited		Not limited	
Berwolf	40	Not limited		Somewhat limited		Not limited	
				Droughty	0.27		
17:							
Lacoca	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Slopes, sprinkler irrigation	1.00		
		Slopes, sprinkler irrigation	1.00				
Rock outcrop	30	Not rated		Not rated		Not rated	
19:							
Gallen	80	Very limited		Very limited		Not limited	
		Slope	1.00	Droughty	1.00		
		Slopes, sprinkler irrigation	1.00	Slopes, sprinkler irrigation	1.00		
		Droughty	0.61				
20:							
Walkon	45	Somewhat limited		Somewhat limited		Not limited	
		Percs slowly	0.31	Depth to hard bedrock	0.84		
		Depth to bedrock	0.10				
Newkirk	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
San Jon	20	Somewhat limited		Somewhat limited		Not limited	
		Droughty	0.57	Depth to soft bedrock	0.99		
		Depth to bedrock	0.46	Droughty	0.87		
		Slope	0.32				
22:							
Chispa	45	Somewhat limited		Not limited		Not limited	
		Slope	0.08				
Redona	35	Not limited		Not limited		Not limited	
23:							
Minneosa	85	Somewhat limited		Somewhat limited		Not limited	
		Occasional flooding	0.60	Droughty	0.88		
25:							
Ima	45	Somewhat limited		Somewhat limited		Not limited	
		Slope	0.68	Droughty	0.01		
La Lande	35	Somewhat limited		Not limited		Not limited	
		Slope	0.08				

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
26:							
Tucumcari	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Percs slowly	0.31	Excess sodium	0.01	Excess sodium	0.01
Montoya	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Percs slowly	1.00	Excess salt	0.14	Excess salt	0.14
		Excess salt	0.14	Excess sodium	0.14	Excess sodium	0.14
27:							
San Jon	40	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.93	Depth to soft bedrock	1.00	Excess sodium	0.01
		Depth to bedrock	0.90	Droughty	1.00		
				Water erodibility	1.00		
				Excess sodium	0.01		
Lacoca	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	0.68				
Rock outcrop	15	Not rated		Not rated		Not rated	
28:							
Lacoca	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Slopes, sprinkler irrigation	0.90		
		Slopes, sprinkler irrigation	0.90				
		Surface stones	0.12				
San Jon	30	Very limited		Very limited		Not limited	
		Slope	1.00	Water erodibility	1.00		
		Slopes, sprinkler irrigation	0.90	Depth to soft bedrock	0.94		
		Droughty	0.39	Slopes, sprinkler irrigation	0.90		
		Percs slowly	0.31	Droughty	0.71		
		Depth to bedrock	0.20				
Rock outcrop	15	Not rated		Not rated		Not rated	
29:							
Pojo	45	Very limited		Very limited		Somewhat limited	
		Droughty	1.00	Wind erosion	1.00	Cemented pan	0.99
		Cemented pan	0.99	Droughty	1.00		
				Cemented pan	1.00		
Neso	35	Very limited		Very limited		Very limited	
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Droughty	1.00	Droughty	1.00		
		Surface stones	0.12	Content of large stones	0.50		
Berwolf	15	Not limited		Very limited		Not limited	
				Wind erosion	1.00		
				Droughty	0.54		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
30:							
La Lande-------	50	Very limited		Very limited		Not limited	
		Slope	1.00	Water erodibility	1.00		
		Slopes, sprinkler irrigation	0.40	Slopes, sprinkler irrigation	0.40		
Chispa---------	35	Somewhat limited		Somewhat limited		Not limited	
		Slope	0.08	Droughty	0.01		
32:							
Regnier--------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Water erodibility	1.00		
		Slopes, sprinkler irrigation	0.78	Slopes, sprinkler irrigation	0.78		
		Percs slowly	0.31				
Lacoca---------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Slopes, sprinkler irrigation	1.00		
		Slopes, sprinkler irrigation	1.00				
Rock outcrop---	15	Not rated		Not rated		Not rated	
33:							
Redona---------	55	Not limited		Not limited		Not limited	
Hilken---------	30	Somewhat limited		Very limited		Somewhat limited	
		Droughty	0.59	Cemented pan	1.00	Cemented pan	0.16
		Cemented pan	0.16	Droughty	0.89		
34:							
Palo-----------	70	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
Neso-----------	20	Very limited		Very limited		Very limited	
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Droughty	1.00	Droughty	1.00		
35:							
Hassell--------	50	Very limited		Somewhat limited		Not limited	
		Percs slowly	1.00	Depth to soft bedrock	0.71		
		Depth to bedrock	0.03				
Regnier--------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Droughty	0.99	Droughty	1.00		
		Percs slowly	0.31				
36:							
Alama----------	90	Somewhat limited		Very limited		Somewhat limited	
		Percs slowly	0.38	Water erodibility	1.00	Excess sodium	0.01
				Excess sodium	0.01		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
37:							
Hollomex-------	50	Very limited		Very limited		Somewhat limited	
		Droughty	1.00	Droughty	1.00	Excess sodium	0.01
		Low adsorption	0.98	Water erodibility	1.00		
		Slope	0.92	Slopes, sprinkler irrigation	0.02		
		Slopes, sprinkler irrigation	0.02	Excess sodium	0.01		
Reeves---------	25	Very limited		Very limited		Somewhat limited	
		Droughty	1.00	Droughty	1.00	Excess salt	0.14
		Excess salt	0.14	Excess salt	0.14	Excess sodium	0.01
				Excess sodium	0.01		
50:							
Conger---------	50	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
Hilken---------	35	Somewhat limited		Very limited		Somewhat limited	
		Cemented pan	0.35	Cemented pan	1.00	Cemented pan	0.35
		Droughty	0.26	Droughty	0.50		
55:							
Conger---------	55	Very limited		Very limited		Very limited	
		Cemented pan	1.00	Cemented pan	1.00	Cemented pan	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	0.08	Water erodibility	1.00		
Redona---------	40	Not limited		Not limited		Not limited	
56:							
Karde----------	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.92	Water erodibility	1.00	Excess sodium	0.14
		Percs slowly	0.38	Excess sodium	0.14		
		Slopes, sprinkler irrigation	0.02	Slopes, sprinkler irrigation	0.02		
57:							
Tuloso---------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Surface stones	1.00	Content of large stones	0.50		
		Slope	1.00	Slopes, sprinkler irrigation	0.10		
		Slopes, sprinkler irrigation	0.10				
Flugle---------	35	Somewhat limited		Not limited		Not limited	
		Slope	0.08				
58:							
Deama----------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Slopes, sprinkler irrigation	0.98		
		Slopes, sprinkler irrigation	0.98	Content of large stones	0.50		
		Surface stones	0.76				

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
70:							
Manzano--------	85	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.31				
71:							
Clovis---------	80	Not limited		Not limited		Not limited	
72:							
Harvey---------	45	Somewhat limited		Very limited		Not limited	
		Slope	0.08	Water erodibility	1.00		
Darvey---------	35	Not limited		Somewhat limited		Somewhat limited	
				Excess sodium	0.01	Excess sodium	0.01
73:							
Winona---------	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Content of large stones	0.50		
		Surface stones	0.32	Slopes, sprinkler irrigation	0.10		
		Slopes, sprinkler irrigation	0.10				
Gabaldon-------	15	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Percs slowly	0.22				
75:							
Pastura--------	45	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
				Water erodibility	1.00		
Silver---------	30	Very limited		Not limited		Not limited	
		Percs slowly	1.00				
Gabaldon-------	15	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.22				
76:							
Pastura--------	60	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
		Slope	0.08				
Clovis---------	20	Not limited		Somewhat limited		Somewhat limited	
				Excess sodium	0.01	Excess sodium	0.01
77:							
Cardenas-------	65	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Wind erosion	1.00		
				Droughty	1.00		
Palma----------	25	Not limited		Very limited		Not limited	
				Wind erosion	1.00		
				Droughty	0.24		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
79:							
Travessilla----	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slopes, sprinkler irrigation	1.00	Slopes, sprinkler irrigation	1.00		
		Slope	1.00				
Rock outcrop---	20	Not rated		Not rated		Not rated	
80:							
Travessilla----	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	1.00	Slopes, sprinkler irrigation	0.10		
		Slopes, sprinkler irrigation	0.10				
Hagerman-------	30	Somewhat limited		Very limited		Not limited	
		Slope	0.68	Water erodibility	1.00		
		Depth to bedrock	0.06	Depth to hard bedrock	0.80		
		Droughty	0.01	Droughty	0.01		
Rock outcrop---	20	Not rated		Not rated		Not rated	
81:							
Darvey---------	60	Not limited		Somewhat limited		Somewhat limited	
				Excess sodium	0.01	Excess sodium	0.01
Silver---------	30	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.78				
82:							
Clovis---------	80	Not limited		Somewhat limited		Somewhat limited	
				Droughty	0.08	Excess sodium	0.01
				Excess sodium	0.01		
85:							
Harvey---------	45	Very limited		Very limited		Not limited	
		Slope	1.00	Water erodibility	1.00		
		Slopes, sprinkler irrigation	0.22	Slopes, sprinkler irrigation	0.22		
Dean-----------	40	Somewhat limited		Very limited		Not limited	
		Slope	0.92	Water erodibility	1.00		
		Slopes, sprinkler irrigation	0.02	Slopes, sprinkler irrigation	0.02		
				Droughty	0.02		
86:							
Palma----------	90	Not limited		Very limited		Not limited	
				Wind erosion	1.00		
				Droughty	0.16		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods): Rating class and limiting features	Value	Sprinkler irrigation: Rating class and limiting features	Value	Drip or trickle irrigation: Rating class and limiting features	Value
89:							
Clovis----------	50	Not limited		Somewhat limited		Somewhat limited	
				Excess sodium	0.01	Excess sodium	0.01
Pastura---------	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
91:							
Pastura---------	60	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
				Water erodibility	1.00		
Harvey----------	25	Somewhat limited		Not limited		Not limited	
		Slope	0.68				
92:							
Winona----------	70	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slopes, sprinkler irrigation	1.00	Slopes, sprinkler irrigation	1.00		
		Slope	1.00	Content of large stones	0.50		
		Surface stones	0.32				
Rock outcrop----	20	Not rated		Not rated		Not rated	
93:							
Pastura---------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
				Water erodibility	1.00		
94:							
Palma-----------	85	Not limited		Somewhat limited		Not limited	
				Droughty	0.06		
95:							
Flugle----------	90	Not limited		Very limited		Not limited	
				Wind erosion	1.00		
				Droughty	0.06		
96:							
Mido------------	85	Somewhat limited		Very limited		Not limited	
		Slope	0.68	Wind erosion	1.00		
		Droughty	0.58	Droughty	1.00		
97:							
Bond------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00		
		Slope	0.68				
Hagerman--------	30	Somewhat limited		Very limited		Not limited	
		Slope	0.68	Depth to hard bedrock	1.00		
		Depth to bedrock	0.65	Water erodibility	1.00		
		Droughty	0.49	Droughty	0.81		

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods): Rating class and limiting features	Value	Sprinkler irrigation: Rating class and limiting features	Value	Drip or trickle irrigation: Rating class and limiting features	Value
98:							
La Fonda-------	50	Very limited		Somewhat limited		Not limited	
		Slope	1.00	Slopes, sprinkler irrigation	0.40		
		Slopes, sprinkler irrigation	0.40				
Palma----------	30	Very limited		Somewhat limited		Not limited	
		Slope	1.00	Slopes, sprinkler irrigation	0.10		
		Slopes, sprinkler irrigation	0.10				
101:							
Mido-----------	90	Somewhat limited		Very limited		Not limited	
		Droughty	0.57	Wind erosion	1.00		
				Droughty	1.00		
105:							
Manzano--------	85	Somewhat limited		Not limited		Not limited	
		Percs slowly	0.31				
106:							
Darvey---------	85	Not limited		Somewhat limited		Somewhat limited	
				Excess sodium	0.01	Excess sodium	0.01
107:							
Rune-----------	85	Very limited		Somewhat limited		Somewhat limited	
		Percs slowly	1.00	Excess sodium	0.01	Excess sodium	0.01
111:							
La Lande-------	90	Not limited		Not limited		Not limited	
112:							
Ima------------	90	Not limited		Somewhat limited		Not limited	
				Droughty	0.41		
114:							
Alama----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Percs slowly	0.31	Excess sodium	0.01	Excess sodium	0.01
116:							
Bluhol---------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
		Droughty	1.00	Droughty	1.00	Wetness	1.00
		Frequent flooding	0.80	Excess salt	0.52	Excess salt	0.52
		Excess salt	0.52	Excess sodium	0.05	Excess sodium	0.05
120:							
Sparks---------	80	Very limited		Not limited		Not limited	
		Percs slowly	1.00				
121:							
Slaughter------	85	Very limited		Very limited		Very limited	
		Droughty	1.00	Cemented pan	1.00	Cemented pan	1.00
		Cemented pan	1.00	Droughty	1.00		
		Percs slowly	0.31				

Table 14.—Water Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DAM:							
Dam------------	100	Not rated		Not rated		Not rated	
W:							
Water----------	95	Not rated		Not rated		Not rated	

Table 15.—Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
10:												
Regnier---------	0-3	Loam	CL	A-6	0	0	80-100	75-100	60-75	50-60	25-35	10-15
	3-12	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, GC, SC	A-6	0	0-12	65-100	60-100	50-80	40-60	25-40	10-20
	12-22	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
Lacoca----------	0-8	Loam	SC-SM, SM	A-2-4, A-4	0-2	0-5	90-100	90-98	70-90	30-50	15-25	NP-7
	8-18	Bedrock			---	---	---	---	---	---	---	---
11:												
Tucumcari-------	0-5	Clay loam	CL	A-6	0	0	100	100	85-95	65-85	35-40	15-20
	5-19	Clay loam	CL	A-6, A-7	0	0	100	100	85-100	65-85	38-52	19-29
	19-49	Clay loam	CL	A-6, A-7	0	0	100	100	85-100	65-80	35-45	15-22
	49-60	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0	100	100	90-100	60-80	35-50	15-25
Hassell---------	0-4	Clay loam	CH, CL	A-7	0	0	100	100	85-95	70-90	41-53	21-29
	4-22	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-61	25-37
	22-32	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-61	25-37
	32-42	Bedrock			---	---	---	---	---	---	---	---
13:												
Tucumcari-------	0-5	Loam	CL	A-6	0	0	100	100	80-90	60-70	25-35	10-15
	5-19	Clay loam	CL	A-6, A-7	0	0	100	100	85-100	65-85	38-52	19-29
	19-49	Clay loam	CL	A-6, A-7	0	0	100	100	85-100	65-80	35-45	15-22
	49-60	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0	100	100	90-100	60-80	35-50	15-25

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
13:												
Redona----------	0-4	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-75	25-30	5-10
	4-23	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	100	80-100	35-55	29-47	12-25
	23-60	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	100	80-100	35-55	29-46	12-25
14:												
Kolar-----------	0-5	Fine sandy loam	SC-SM, SC	A-4	0	0	95-100	95-100	70-80	40-50	20-25	5-10
	5-10	Gravelly very fine sandy loam, sandy loam, fine sandy loam	CL-ML, ML, SM	A-4	0	0-10	75-95	70-90	50-65	40-55	20-25	NP-5
	10-20	Petrocalcic material			---	---	---	---	---	---	---	---
Neso------------	0-4	Gravelly fine sandy loam	GC-GM, SC-SM, SC	A-2, A-4	0	5-10	65-80	60-75	55-65	30-40	20-30	5-10
	4-12	Very cobbly fine sandy loam, very gravelly fine sandy loam, extremely cobbly fine sandy loam	GC-GM, SC-SM, SC, GC	A-2	0	5-25	35-65	35-60	25-40	10-30	20-30	5-10
	12-22	Petrocalcic material			---	---	---	---	---	---	---	---
15:												
Hilken----------	0-3	Fine sandy loam	SC-SM, SC	A-4, A-2	0	0	95-100	90-100	75-90	30-45	15-25	5-10
	3-21	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	95-100	90-100	70-85	45-60	25-40	10-20
	21-27	Very gravelly sandy clay loam, gravelly sandy clay loam	GC, SC	A-2, A-6	0	0-10	50-85	30-75	25-50	15-40	30-40	10-20
	27-37	Petrocalcic material			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
15:												
Palo------------	0-4	Fine sandy loam	SC-SM, SM, SC	A-2, A-4	0	0	90-100	75-100	55-85	25-40	15-25	NP-10
	4-11	Sandy clay loam, clay loam, fine sandy loam	CL, SC	A-2, A-6	0	0	90-100	75-100	55-85	30-60	25-40	10-20
	11-16	Gravelly sandy clay loam	CL, GC, SC	A-2, A-6	0	0-5	65-90	55-75	45-65	30-55	25-40	10-20
	16-26	Petrocalcic material			---	---	---	---	---	---	---	---
16:												
Redona----------	0-7	Fine sandy loam	CL-ML, SM	A-2, A-4	0	0	100	100	80-90	30-50	20-25	NP-5
	7-37	Sandy clay loam, clay loam, loam	CL, SC	A-7, A-6	0	0	100	100	80-100	35-55	29-47	12-25
	37-60	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	100	80-100	35-55	29-46	12-25
Berwolf---------	0-6	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	75-90	30-40	15-25	NP-5
	6-41	Fine sandy loam, sandy loam	SC-SM, SC	A-2	0	0	100	100	65-80	25-35	20-25	5-10
	41-60	Fine sandy loam, loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	100	75-90	20-40	15-25	NP-5
17:												
Lacoca----------	0-11	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	90-98	70-90	25-45	15-25	NP-7
	11-21	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
19:												
Gallen----------	0-3	Very gravelly sandy loam	GC, GC-GM, SC	A-1, A-2	0	0-10	40-60	30-50	20-40	15-30	20-25	5-10
	3-9	Very gravelly sandy loam	GC-GM, SC, GC	A-1, A-2	0	0-10	40-60	30-50	20-40	15-30	20-25	5-10
	9-60	Extremely gravelly loam, very gravelly loam, very gravelly sandy loam	GC-GM, GP, GP-GC, GC	A-1, A-2	0-5	5-20	30-60	10-50	5-40	0-30	20-25	5-10

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
20:												
Walkon----------	0-5	Fine sandy loam	SC-SM, SC	A-2, A-4	0	0-5	90-100	90-100	55-70	25-40	25-30	5-10
	5-35	Silty clay loam, sandy clay loam, clay loam	CL	A-6	0	0-5	95-100	95-100	75-90	60-75	25-35	10-20
	35-45	Bedrock			---	---	---	---	---	---	---	---
Newkirk---------	0-3	Fine sandy loam	ML, SM	A-2, A-4	0	0-5	85-100	80-100	50-85	25-55	20-30	NP-5
	3-16	Sandy clay loam, clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0-5	85-100	80-100	65-95	30-75	25-40	5-15
	16-26	Bedrock			---	---	---	---	---	---	---	---
San Jon---------	0-6	Fine sandy loam	SC-SM, SC	A-2, A-4	0	0	95-100	90-100	80-90	30-50	20-30	5-10
	6-24	Sandy clay loam	CL, SC	A-6	0	0	100	90-100	75-90	40-55	30-35	10-15
	24-30	Gravelly loam	CL-ML, SC-SM, CL	A-4	0	0	70-90	55-75	50-75	45-65	25-30	5-10
	30-40	Bedrock			---	---	---	---	---	---	---	---
22:												
Chispa----------	0-11	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	90-100	85-100	75-90	36-60	20-30	NP-10
	11-23	Sandy clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	85-100	75-90	50-70	31-45	15-25
	23-60	Sandy clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	85-100	75-90	50-70	33-44	17-25
Redona----------	0-7	Fine sandy loam	SM, CL-ML	A-2, A-4	0	0	100	100	80-90	30-50	20-25	NP-5
	7-40	Sandy clay loam, clay loam, loam	CL, SC	A-7, A-6	0	0	100	100	80-100	35-55	29-47	12-25
	40-60	Sandy clay loam, clay loam, loam	CL, SC	A-7, A-6	0	0	100	100	80-100	35-55	29-46	12-25
23:												
Minneosa--------	0-8	Very fine sandy loam	CL-ML, CL	A-4	0	0	100	100	85-95	55-75	20-25	5-10
	8-60	Stratified sand to fine sandy loam	SC, SC-SM, SM	A-2	0	0	100	90-100	50-70	25-35	15-25	NP-10

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
25:												
Ima-------------	0-4	Fine sandy loam	CL, SC-SM, SM	A-2, A-4	0	0	90-100	85-100	75-100	30-50	15-25	NP-10
	4-22	Fine sandy loam, sandy loam	CL, SC-SM, SC	A-2, A-4	0	0	90-100	85-100	75-100	25-50	20-25	5-10
	22-60	Fine sandy loam	CL	A-6	0	0	90-100	85-100	75-100	60-80	25-35	10-15
La Lande--------	0-7	Fine sandy loam	SC-SM, SC	A-2, A-4	0	0	100	100	75-90	30-40	20-25	5-10
	7-36	Loam, sandy clay loam, clay loam	CL	A-6	0	0	100	100	75-90	55-65	29-47	12-25
	36-60	Loam, sandy clay loam, clay loam	CL	A-7, A-6	0	0	100	100	75-90	60-70	29-47	12-25
26:												
Tucumcari-------	0-7	Loam	CL	A-6	0	0	100	100	80-90	60-70	25-35	10-15
	7-32	Clay loam, silty clay, silty clay loam	CH, CL	A-7	0	0	100	100	90-100	60-90	40-55	20-30
	32-60	Clay loam, sandy clay loam, clay	CL	A-6, A-7	0	0	100	100	90-100	60-80	35-50	15-25
Montoya---------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-85	35-45	15-20
	9-47	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	95-100	90-100	75-95	45-65	25-35
	47-60	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	95-100	90-100	70-80	41-52	21-29
27:												
San Jon---------	0-3	Loam	CL-ML, CL	A-4	0	0	95-100	90-100	80-95	65-80	25-30	5-10
	3-24	Sandy clay loam	CL, SC	A-6	0	0	100	90-100	75-90	40-55	30-35	10-15
	24-34	Bedrock			---	---	---	---	---	---	---	---
Lacoca----------	0-8	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	90-98	70-90	25-45	15-25	NP-7
	8-18	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
28:												
Lacoca----------	0-12	Cobbly fine sandy loam	SC, SC-SM, SM	A-2, A-4	0	15-25	75-95	70-90	60-80	20-40	15-25	NP-10
	12-22	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
28:												
San Jon---------	0-6	Loam	ML, CL-ML, CL	A-4	0	0	85-100	80-95	75-90	55-70	25-35	5-10
	6-33	Loam, clay loam, silty clay loam	CL	A-6	0	0	80-95	75-90	70-85	55-80	30-40	10-15
	33-44	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
29:												
Pojo------------	0-6	Loamy fine sand	SC-SM, SM	A-2	0	0	95-100	95-100	70-85	25-35	10-20	NP-5
	6-21	Fine sandy loam	CL, SC-SM, SC	A-4	0	0-5	90-100	90-100	70-80	40-50	15-25	5-10
	21-31	Petrocalcic material			---	---	---	---	---	---	---	---
Neso------------	0-2	Very gravelly loamy fine sand	GM, SM, SC-SM	A-1	0-2	15-25	40-65	35-60	30-50	15-25	15-20	NP-5
	2-10	Very cobbly fine sandy loam, very gravelly fine sandy loam, extremely cobbly fine sandy loam	GC-GM, SC-SM, GC	A-2	0-2	15-50	34-64	30-60	25-40	10-30	20-30	5-10
	10-20	Petrocalcic material			---	---	---	---	---	---	---	---
Berwolf---------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	100	75-90	20-30	15-20	NP-5
	8-49	Fine sandy loam, sandy loam	SC-SM, SC	A-2	0	0	100	100	65-80	25-35	20-25	5-10
	49-60	Fine sandy loam, loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	100	75-90	20-40	15-25	NP-5
30:												
La Lande--------	0-4	Loam	CL	A-6	0	0	100	100	80-95	65-80	25-30	10-15
	4-17	Loam, sandy clay loam, clay loam	CL	A-6	0	0	100	100	75-90	55-65	25-40	10-20
	17-60	Loam, sandy clay loam	CL	A-6	0	0	100	100	70-85	50-60	25-35	10-15

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
30:												
Chispa----------	0-8	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	90-100	85-100	75-90	36-60	20-30	NP-10
	8-22	Sandy clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	85-100	75-90	50-70	33-45	17-25
	22-60	Sandy clay loam, clay loam, loam	CL	A-6, A-7	0	0	90-100	85-100	75-90	50-70	33-44	17-25
32:												
Regnier---------	0-8	Loam	CL	A-6	0	0	80-100	75-100	60-75	50-60	25-35	10-15
	8-12	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, GC, SC	A-6	0	0-10	75-100	65-95	50-80	40-60	25-40	10-20
	12-22	Bedrock			---	---	---	---	---	---	---	---
Lacoca----------	0-5	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0-5	90-100	90-98	70-90	25-45	15-25	NP-7
	5-15	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
33:												
Redona----------	0-5	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-75	25-30	5-10
	5-33	Sandy clay loam, clay loam, loam	CL, SC	A-7, A-6	0	0	100	100	80-100	35-55	29-47	12-25
	33-60	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	100	80-100	35-55	29-46	12-25
Hilken----------	0-7	Loam	CL-ML, CL	A-4	0	0	95-100	90-100	70-90	55-75	15-25	5-10
	7-22	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	95-100	90-100	70-85	45-60	25-40	10-20
	22-34	Very gravelly sandy clay loam, gravelly sandy clay loam	GC, SC	A-2, A-6	0	0-10	50-85	30-75	25-50	15-40	30-40	10-20
	34-45	Petrocalcic material			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
34:												
Palo------------	0-4	Fine sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	55-85	25-40	15-25	NP-10
	4-14	Sandy clay loam, clay loam, fine sandy loam	CL, SC	A-2, A-6	0	0	90-100	75-100	55-85	30-60	25-40	10-20
	14-24	Petrocalcic material			---	---	---	---	---	---	---	---
Neso------------	0-6	Gravelly fine sandy loam	GC-GM, SC-SM, SC	A-2, A-4	0-2	5-10	65-80	60-75	55-65	30-40	20-30	5-10
	6-13	Very cobbly fine sandy loam, very gravelly fine sandy loam, extremely cobbly fine sandy loam	GC-GM, SC-SM, GC, SC	A-2	0-5	5-15	35-65	35-60	25-40	10-30	20-30	5-10
	13-23	Petrocalcic material			---	---	---	---	---	---	---	---
35:												
Hassell---------	0-12	Clay loam	CL	A-7	0	0	100	100	85-95	70-90	41-53	21-29
	12-22	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-61	25-37
	22-37	Clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-61	25-37
	37-47	Bedrock			---	---	---	---	---	---	---	---
Regnier---------	0-12	Clay loam	CL	A-6	0	0	80-100	75-100	65-80	55-65	35-40	15-20
	12-18	Clay loam, sandy clay loam, gravelly sandy clay loam	CL, GC, SC	A-6	0	0-10	70-100	60-100	50-80	40-60	25-40	10-20
	18-28	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
36:												
Alama-----------	0-3	Silt loam	CL	A-6	0	0	100	100	95-100	70-80	25-35	10-15
	3-28	Silty clay loam, clay loam, silt loam	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
	28-60	Silt loam, loam, clay loam	CL	A-6	0	0	100	100	95-100	75-85	25-40	10-20
37:												
Hollomex--------	0-2	Loam	CL-ML, ML, CL	A-4	0	0	100	100	85-95	65-75	15-25	NP-10
	2-60	Gypsiferous silt loam			---	---	---	---	---	---	---	---
Reeves----------	0-3	Fine sandy loam	SC-SM, CL, SC	A-4	0	0	100	100	75-90	40-50	25-30	4-9
	3-24	Loam, clay loam	CL	A-6	0	0	100	100	75-90	65-80	25-35	10-15
	24-32	Loam, clay loam	CL	A-6	0	0	100	100	75-90	65-80	29-41	12-21
	32-60	Gypsiferous very fine sandy loam			---	---	---	---	---	---	---	---
50:												
Conger----------	0-13	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	90-100	90-100	75-95	40-65	20-35	5-15
	13-23	Petrocalcic material			---	---	---	---	---	---	---	---
Hilken----------	0-6	Loam	CL-ML, CL	A-4	0	0	95-100	90-100	70-90	55-75	15-25	5-10
	6-31	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	95-100	90-100	70-85	45-60	25-40	10-20
	31-41	Petrocalcic material			---	---	---	---	---	---	---	---
55:												
Conger----------	0-18	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-100	90-100	75-95	50-65	20-35	5-15
	18-28	Petrocalcic material			---	---	---	---	---	---	---	---
Redona----------	0-5	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-75	25-30	5-10
	5-23	Sandy clay loam, clay loam, loam	CL, SC	A-7, A-6	0	0	100	100	80-100	35-55	29-47	12-25
	23-60	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	100	80-100	35-55	29-46	12-25

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
56:												
Karde-----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	70-90	55-75	20-30	5-15
	9-19	Clay loam	CL	A-6	0	0	100	100	75-100	70-90	35-40	15-20
	19-33	Silty clay loam	CL	A-6, A-7	0	0	100	100	80-100	80-100	35-45	15-20
	33-60	Clay loam	CL	A-6	0	0	100	100	75-100	70-90	35-40	15-20
57:												
Tuloso----------	0-2	Very cobbly fine sandy loam	GC-GM, SC-SM, SC	A-2	0-4	45-50	60-75	60-75	50-70	20-35	15-25	5-10
	2-11	Very cobbly fine sandy loam	GC-GM, SC-SM, SC	A-2	0-4	45-50	60-75	60-75	50-70	20-35	15-25	5-10
	11-21	Bedrock			---	---	---	---	---	---	---	---
Flugle----------	0-6	Fine sandy loam	SC-SM, SC	A-2, A-4	0	0	100	90-100	50-60	30-40	20-25	5-10
	6-31	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	90-100	60-80	40-60	30-40	10-20
	31-60	Sandy loam, fine sandy loam	SC-SM, SC	A-2, A-4	0	0	100	90-100	50-60	30-40	20-30	5-10
58:												
Deama-----------	0-7	Cobbly loam	SC	A-6	0-2	25-30	75-85	70-80	60-75	35-50	25-35	10-15
	7-14	Very cobbly loam	GC	A-2, A-6	0-2	45-55	55-70	50-65	30-50	25-45	25-35	10-15
	14-17	Very gravelly very fine sandy loam	GC-GM, SC-SM, GC, SC	A-2	0-2	10-25	50-65	35-45	30-45	15-30	20-25	5-10
	17-27	Bedrock			---	---	---	---	---	---	---	---
70:												
Manzano---------	0-11	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-80	20-30	5-10
	11-21	Sandy clay loam, clay loam, loam	CL	A-6	0	0	100	100	85-100	60-85	29-47	12-24
	21-41	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	85-100	60-85	29-46	12-24
	41-60	Clay loam, loam, sandy clay loam	CL	A-6	0	0	100	100	85-100	60-85	25-40	10-20

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
71:												
Clovis----------	0-8	Fine sandy loam	CL-ML, SC-SM, CL	A-4	0	0	100	100	70-90	40-60	20-25	5-10
	8-29	Sandy clay loam, clay loam, loam	CL	A-7, A-6	0	0	100	100	90-100	50-85	31-47	13-25
	29-60	Sandy clay loam, clay loam, loam	CL	A-6	0	0	100	100	90-100	50-85	31-46	13-25
72:												
Harvey----------	0-4	Very fine sandy loam	CL-ML, CL	A-4	0	0	80-100	80-100	70-100	50-80	25-30	5-10
	4-19	Clay loam, sandy clay loam, loam	CL, SC	A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
	19-60	Clay loam, sandy clay loam, loam	CL, SC	A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
Darvey----------	0-6	Loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	6-25	Loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20
	25-60	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20
73:												
Winona----------	0-4	Very channery fine sandy loam	GC	A-2	0-5	15-30	30-50	25-45	25-40	15-30	15-28	8-10
	4-12	Very cobbly loam, very flaggy loam, very cobbly fine sandy loam	GC-GM, GC	A-2, A-4	0-5	30-50	50-80	50-70	40-60	20-45	25-30	5-10
	12-22	Bedrock			---	---	---	---	---	---	---	---
Gabaldon--------	0-4	Silt loam	CL	A-6	0	0	95-100	95-100	90-100	80-90	25-35	10-15
	4-25	Loam, silt loam, silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	80-90	25-40	10-20
	25-60	Loam, silt loam, silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	80-90	25-40	10-20

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
75:												
Pastura---------	0-3	Loam	CL	A-6	0	0-10	90-100	85-100	70-90	50-70	30-35	10-15
	3-10	Loam, clay loam, gravelly clay loam	CL	A-6	0	0	75-95	65-90	60-80	50-70	25-40	10-20
	10-20	Petrocalcic material			---	---	---	---	---	---	---	---
Silver----------	0-6	Loam	CL	A-6	0	0	95-100	90-100	85-95	60-75	30-35	10-15
	6-48	Clay loam, clay	CH, CL	A-7	0	0	95-100	90-100	85-95	75-95	45-62	25-36
	48-60	Clay loam, clay	CH, CL	A-7	0	0	95-100	90-100	85-95	75-95	45-61	25-37
75:												
Gabaldon--------	0-11	Silt loam	CL	A-6	0	0	95-100	95-100	90-100	80-90	25-35	10-15
	11-25	Loam, silt loam, silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	80-90	29-47	12-25
	25-60	Loam, silt loam, silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	80-90	29-46	12-25
76:												
Pastura---------	0-5	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0-5	75-95	65-85	50-65	30-40	15-25	NP-5
	5-15	Loam, clay loam, gravelly clay loam	CL	A-6	0	0	75-95	65-90	60-80	50-70	25-40	10-20
	15-26	Petrocalcic material			---	---	---	---	---	---	---	---
Clovis----------	0-5	Fine sandy loam	CL-ML, SC-SM, CL	A-4	0	0	100	100	70-90	40-60	20-25	5-10
	5-21	Sandy clay loam, clay loam, loam	CL	A-7, A-6	0	0	100	100	90-100	50-85	31-47	13-25
	21-60	Sandy clay loam, clay loam, loam	CL	A-6	0	0	100	100	90-100	50-85	31-46	13-25
77:												
Cardenas--------	0-4	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	70-90	15-40	15-20	NP-5
	4-14	Fine sandy loam, gravelly fine sandy loam, loamy very fine sand	SC-SM, SC	A-4	0	0	75-100	70-100	65-85	40-50	15-25	5-10
	14-24	Petrocalcic material			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
77:												
Palma-----------	0-5	Loamy fine sand	SM, SC-SM	A-2	0	0	100	100	60-80	15-20	10-20	NP-5
	5-21	Fine sandy loam, sandy loam	SC, SC-SM	A-4	0	0	100	100	65-85	35-45	20-25	5-10
	21-60	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	65-85	30-45	15-25	NP-5
79:												
Travessilla-----	0-6	Channery loam	GC-GM, GM, SC-SM, SM, SC	A-1, A-2, A-4	0-5	0-5	55-80	55-75	35-60	20-45	15-25	NP-10
	6-13	Loam, channery loam, stony loam	CL-ML, GC-GM, SC-SM, CL, SC	A-4	0-5	0-20	60-90	55-85	50-75	35-55	20-25	5-10
	13-23	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
80:												
Travessilla-----	0-6	Fine sandy loam	SC-SM, SC	A-4	0	0	100	100	65-75	35-50	25-30	5-10
	6-12	Loam, sandy loam, fine sandy loam	CL, SC	A-6	0	0	100	100	70-85	35-55	25-35	10-15
	12-22	Bedrock			---	---	---	---	---	---	---	---
Hagerman--------	0-7	Loam	CL	A-6	0	0	95-100	90-100	85-90	60-75	30-35	10-15
	7-36	Sandy clay loam, clay loam, sandy loam	CL, SC	A-6	0	0	95-100	90-100	70-80	45-60	25-40	10-20
	36-46	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
81:												
Darvey----------	0-4	Loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	4-30	Loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20
	30-60	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
81:												
Silver----------	0-6	Loam	CL	A-6	0	0	95-100	90-100	85-95	60-75	30-35	10-15
	6-26	Clay loam, clay	CH, CL	A-7	0	0	95-100	90-100	85-95	75-95	45-62	25-36
	26-35	Clay loam, clay	CH, CL	A-7	0	0	95-100	90-100	85-95	75-95	45-61	25-37
	35-60	Clay loam, clay	CH, CL	A-7	0	0	95-100	90-100	85-95	75-95	45-60	25-37
82:												
Clovis----------	0-4	Loam	CL-ML, CL	A-4	0	0	100	100	90-100	65-85	25-30	5-10
	4-23	Sandy clay loam, clay loam, loam	CL	A-6	0	0	100	100	90-100	50-85	30-40	10-20
	23-60	Very fine sandy loam, fine sandy loam, loam	CL-ML, CL	A-4	0	0	100	100	90-100	50-75	20-25	5-10
85:												
Harvey----------	0-10	Loam	CL-ML, CL	A-4	0	0	80-100	80-100	70-100	50-80	25-30	5-10
	10-38	Clay loam, sandy clay loam, loam	CL, SC	A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
	38-60	Clay loam, sandy clay loam, loam	CL, SC	A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
Dean------------	0-8	Loam	CL-ML, CL	A-4	0	0	80-100	75-100	65-95	60-85	20-30	5-10
	8-28	Gravelly loam, gravelly sandy loam, loam	GC, SC, CL	A-6	0	5-10	60-80	55-70	50-65	35-55	20-30	10-15
	28-60	Loam	CL-ML, CL	A-6, A-4	0	0	80-100	75-100	65-95	50-80	22-39	6-17
86:												
Palma-----------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	100	60-80	15-20	10-20	NP-5
	8-35	Fine sandy loam, sandy loam	SC, SC-SM	A-4	0	0	100	100	65-85	35-45	20-25	5-10
	35-60	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	65-85	30-45	15-25	NP-5

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
89:												
Clovis----------	0-7	Loam	CL-ML, CL	A-4	0	0	100	100	90-100	65-85	25-30	5-10
	7-31	Sandy clay loam, clay loam, loam	CL	A-6	0	0	100	100	90-100	50-85	30-40	10-20
	31-60	Very fine sandy loam, fine sandy loam, loam	CL-ML, CL	A-4	0	0	100	100	90-100	50-75	20-25	5-10
Pastura---------	0-8	Loam	CL	A-6	0	0-10	90-100	85-100	70-90	50-70	30-35	10-15
	8-15	Loam, clay loam, gravelly clay loam	CL	A-6	0	0	75-95	65-90	60-80	50-70	25-40	10-20
	15-25	Petrocalcic material			---	---	---	---	---	---	---	---
91:												
Pastura---------	0-4	Loam	CL	A-6	0	0-10	90-100	85-100	70-90	50-70	30-35	10-15
	4-14	Loam, clay loam, gravelly clay loam	CL	A-6	0	0	75-95	65-90	60-80	50-70	25-40	10-20
	14-24	Petrocalcic material			---	---	---	---	---	---	---	---
Harvey----------	0-6	Fine sandy loam	CL-ML, SC-SM, CL, SC	A-2, A-4	0	0	80-100	80-100	55-90	30-60	20-30	5-10
	6-26	Clay loam, sandy clay loam, loam	CL, SC	A-7, A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
	26-60	Clay loam, sandy clay loam, loam	CL, SC	A-6	0	0	80-100	80-100	70-100	45-80	29-47	12-25
92:												
Winona----------	0-4	Very channery fine sandy loam	GC	A-2	0-5	15-30	40-65	35-60	25-40	15-30	15-28	8-10
	4-14	Very cobbly loam, very flaggy loam, very cobbly fine sandy loam	GC-GM, SC-SM, GC, SC	A-2, A-4	0-5	30-50	50-80	50-70	40-60	20-45	25-30	5-10
	14-24	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
93:												
Pastura----------	0-9	Loam	CL	A-6	0	0-10	90-100	85-100	70-90	50-70	30-35	10-15
	9-15	Loam, clay loam, gravelly clay loam	CL	A-6	0	0	75-95	65-90	60-80	50-70	25-40	10-20
	15-25	Petrocalcic material			---	---	---	---	---	---	---	---
94:												
Palma------------	0-5	Fine sandy loam	SC, SC-SM	A-4	0	0	100	100	60-85	35-45	20-30	5-10
	5-23	Fine sandy loam, sandy loam	SC, SC-SM	A-4	0	0	100	100	65-85	35-45	20-25	5-10
	23-60	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	65-85	30-45	15-25	NP-5
95:												
Flugle-----------	0-6	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	75-90	25-40	15-20	NP-5
	6-20	Fine sandy loam	SC-SM, SC	A-2, A-4	0	0	100	90-100	50-60	30-40	20-25	5-10
	20-42	Sandy clay loam, clay loam, loam	CL, SC	A-6	0	0	100	90-100	60-80	40-60	30-40	10-20
	42-60	Sandy loam, fine sandy loam	SC-SM, SC	A-2, A-4	0	0	100	90-100	50-60	30-40	20-30	5-10
96:												
Mido-------------	0-11	Loamy fine sand	SM, SC-SM	A-2	0	0	100	100	75-95	20-35	0-15	NP-5
	11-60	Loamy fine sand, fine sand, loamy sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	70-95	5-35	0-15	NP-5
97:												
Bond-------------	0-3	Fine sandy loam	SC-SM, CL, SC	A-4	0	0	100	100	70-85	40-50	20-30	5-10
	3-14	Sandy clay loam, clay loam	CL, SC	A-6	0	0-5	95-100	90-100	70-90	40-70	30-40	10-20
	14-24	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
97:												
Hagerman--------	0-7	Loam	CL	A-6	0	0	95-100	90-100	85-90	60-75	30-35	10-15
	7-28	Sandy clay loam, clay loam, sandy loam	CL, SC	A-6	0	0	95-100	90-100	70-80	45-60	25-40	10-20
	28-38	Bedrock			---	---	---	---	---	---	---	---
98:												
La Fonda--------	0-20	Fine sandy loam	CL-ML, SC-SM, SC	A-4	0	0	100	100	70-85	40-55	20-25	5-10
	20-38	Loam, clay loam, sandy clay loam	CL	A-6	0	0	95-100	95-100	85-95	60-85	29-46	12-25
	38-60	Loam, clay loam, sandy clay loam	CL	A-6	0	0	95-100	95-100	85-95	60-85	29-46	12-25
Palma-----------	0-3	Fine sandy loam	SC, SC-SM	A-4	0	0	100	100	60-85	35-45	20-30	5-10
	3-56	Fine sandy loam, sandy loam	SC, SC-SM	A-4	0	0	100	100	65-85	35-45	20-25	5-10
	56-60	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	65-85	30-45	15-25	NP-5
101:												
Mido------------	0-12	Loamy fine sand	SM, SC-SM	A-2	0	0	100	100	75-95	20-35	0-15	NP-5
	12-60	Loamy fine sand, fine sand, loamy sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	70-95	5-35	0-15	NP-5
105:												
Manzano---------	0-9	Loam	CL-ML, CL	A-4	0	0	100	100	85-100	60-80	20-30	5-10
	9-21	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	85-100	60-85	25-40	10-20
	21-29	Loam, clay loam, sandy clay loam	CL	A-7, A-6	0	0	100	100	85-100	65-85	35-48	17-25
	29-60	Loam, clay loam, sandy clay loam	CL	A-7, A-6	0	0	100	100	85-100	65-85	35-46	17-25

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
106:												
Darvey----------	0-10	Loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	10-37	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20
	37-60	Loam	CL	A-6	0	0	100	100	80-100	50-90	30-40	10-20
107:												
Rune------------	0-19	Clay loam	CL	A-6	0	0	100	100	80-90	70-80	35-40	15-20
	19-60	Clay, silty clay, clay loam	CH, CL	A-7	0	0	100	100	85-95	70-95	45-60	30-40
111:												
La Lande--------	0-12	Loam	CL	A-6	0	0	100	100	80-95	65-80	25-30	10-15
	12-37	Loam, sandy clay loam, clay loam	CL	A-6	0	0	100	100	75-90	55-65	25-40	10-20
	37-60	Loam, sandy clay loam	CL	A-6	0	0	100	100	70-85	50-60	25-35	10-15
112:												
Ima-------------	0-10	Sandy loam	SC-SM, SM, SC	A-2, A-4	0	0	90-100	85-100	75-100	25-45	15-25	NP-10
	10-32	Fine sandy loam, sandy loam	SC-SM, CL, SC	A-2, A-4	0	0	90-100	85-100	75-100	25-50	19-30	4-12
	32-60	Fine sandy loam, sandy loam	SC-SM, CL, SC	A-2, A-4	0	0	90-100	85-100	75-100	25-50	19-29	4-12
114:												
Alama-----------	0-7	Silt loam	CL	A-6	0	0	100	100	95-100	70-80	25-35	10-15
	7-60	Silty clay loam, clay loam, silt loam	CL	A-6	0	0	100	100	95-100	75-95	25-40	10-20
116:												
Bluhol----------	0-4	Loam	CL-ML, CL	A-4	0	0	95-100	90-100	75-95	60-75	20-30	5-10
	4-60	Gypsiferous sandy loam		A-1	---	---	---	---	---	---	---	---
120:												
Sparks----------	0-8	Loam	CL	A-6	0	0	100	100	85-100	60-75	25-35	10-15
	8-39	Clay, clay loam	CH, CL	A-7	0	0	100	100	90-100	70-90	40-55	20-30
	39-60	Clay loam	CL	A-6	0	0	100	95-100	90-95	60-75	35-40	15-20

Table 15.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
121:												
Slaughter-------	0-6	Loam	CL	A-6	0	0	100	100	85-95	60-80	28-40	11-20
	6-16	Clay loam, clay	CL	A-6, A-7	0	0	98-100	95-100	95-100	65-90	35-50	17-30
	16-26	Petrocalcic material			---	---	---	---	---	---	---	---
DAM.												
Dam												
W.												
Water												

Table 16.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
10:														
Regnier----------	0-3	35-45	32-45	18-27	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.5-1.0	.37	.43	2	4L	86
	3-12	25-55	20-45	18-35	1.45-1.55	0.2-0.6	0.14-0.16	3.0-5.9	0.1-0.5	.32	.32			
	12-22	---	---	---	---	0.00-0.2	---	---	---	---	---			
Rock outcrop.														
Lacoca-----------	0-8	35-50	35-50	5-18	1.30-1.50	0.6-2	0.10-0.15	0.0-2.9	0.5-1.0	.24	.28	1	4L	86
	8-18	---	---	---	---	0.00-0.6	---	---	---	---	---			
11:														
Tucumcari--------	0-5	25-45	25-45	27-35	1.30-1.40	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4L	86
	5-19	20-45	20-45	28-40	1.40-1.50	0.2-0.6	0.19-0.22	3.0-5.9	0.5-1.2	.32	.32			
	19-49	20-40	20-40	35-45	1.45-1.55	0.2-0.6	0.19-0.22	3.0-5.9	0.1-0.8	.32	.32			
	49-60	20-50	20-40	30-45	1.45-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.8	.32	.32			
Hassell----------	0-4	30-40	25-40	30-40	1.20-1.30	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4	86
	4-22	0-20	35-65	35-50	1.40-1.50	0.06-0.2	0.16-0.20	6.0-8.9	0.1-0.7	.37	.37			
	22-32	10-35	20-50	35-50	1.40-1.50	0.06-0.2	0.16-0.20	6.0-8.9	0.0-0.5	.37	.37			
	32-42	---	---	---	---	0.00-0.2	---	---	---	---	---			
13:														
Tucumcari--------	0-5	30-45	32-45	18-27	1.30-1.40	0.6-2	0.16-0.19	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	5-19	25-45	25-55	28-40	1.40-1.50	0.2-0.6	0.19-0.22	3.0-5.9	0.5-1.2	.32	.32			
	19-49	20-45	20-45	35-45	1.45-1.55	0.2-0.6	0.19-0.22	3.0-5.9	0.1-0.8	.32	.32			
	49-60	25-50	20-40	30-45	1.45-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.8	.32	.32			
Redona-----------	0-4	35-50	35-45	10-25	1.30-1.40	0.6-2	0.15-0.17	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	4-23	35-65	10-35	18-35	1.35-1.45	0.6-2	0.17-0.19	3.0-5.9	0.1-1.0	.32	.32			
	23-60	35-65	20-45	18-35	1.40-1.50	0.6-2	0.16-0.18	3.0-5.9	0.0-0.6	.37	.37			
14:														
Kolar------------	0-5	60-75	10-25	8-16	1.40-1.50	2-6	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	3	86
	5-10	60-75	10-25	9-18	1.40-1.50	2-6	0.11-0.13	0.0-2.9	0.1-0.5	.28	.37			
	10-20	---	---	---	---	0.00-0.06	---	---	---	---	---			
Neso-------------	0-4	55-75	15-25	10-20	1.35-1.45	2-6	0.10-0.12	0.0-2.9	1.0-2.0	.15	.28	1	4	86
	4-12	55-75	15-25	10-20	1.40-1.50	2-6	0.07-0.09	0.0-2.9	0.2-1.0	.10	.43			
	12-22	---	---	---	---	0.00-0.06	---	---	---	---	---			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
15:														
Hilken-----------	0-3	55-70	20-30	7-16	1.35-1.45	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.28	.28	2	3	86
	3-21	40-65	10-35	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.3-0.7	.32	.32			
	21-27	35-65	10-25	20-35	1.40-1.50	0.6-2	0.06-0.09	3.0-5.9	0.1-0.5	.15	.37			
	27-37	---	---	---	---	0.00-0.06	---	---	---	---	---			
Palo-------------	0-4	55-75	15-25	7-18	1.40-1.50	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.28	.32	1	3	86
	4-11	40-65	10-25	18-35	1.40-1.50	0.6-2	0.13-0.17	3.0-5.9	0.2-0.5	.32	.37			
	11-16	50-65	10-25	18-35	1.20-1.30	0.6-2	0.11-0.13	3.0-5.9	0.1-0.2	.15	.28			
	16-26	---	---	---	---	0.00-0.06	---	---	---	---	---			
16:														
Redona-----------	0-7	60-75	15-25	10-15	1.35-1.45	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	7-37	35-60	10-40	18-35	1.40-1.50	0.6-2	0.18-0.20	3.0-5.9	0.2-1.0	.32	.32			
	37-60	40-65	10-40	18-35	1.40-1.50	0.6-2	0.17-0.19	3.0-5.9	0.1-0.5	.32	.32			
Berwolf----------	0-6	55-80	15-35	7-15	1.40-1.50	2-6	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	6-41	55-80	15-35	10-18	1.40-1.50	2-6	0.12-0.14	0.0-2.9	0.5-1.0	.28	.28			
	41-60	55-80	15-35	7-15	1.40-1.50	2-6	0.13-0.15	0.0-2.9	0.1-0.5	.28	.28			
17:														
Lacoca-----------	0-11	55-70	15-30	5-18	1.35-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-1.0	.20	.20	1	3	86
	11-21	---	---	---	---	0.00-0.06	---	---	---	---	---			
Rock outcrop.														
19:														
Gallen-----------	0-3	55-75	15-25	10-18	1.35-1.45	2-6	0.08-0.10	0.0-2.9	1.0-2.0	.10	.32	2	6	48
	3-9	55-75	15-25	10-18	1.35-1.45	2-6	0.08-0.10	0.0-2.9	0.5-1.0	.10	.32			
	9-60	40-75	15-35	10-18	1.40-1.50	2-6	0.06-0.08	0.0-2.9	0.0-0.5	.10	.37			
20:														
Walkon-----------	0-5	55-70	10-30	15-20	1.35-1.45	2-6	0.11-0.15	0.0-2.9	1.0-2.0	.24	.24	2	3	86
	5-35	15-60	15-40	20-35	1.45-1.55	0.2-0.6	0.15-0.21	3.0-5.9	0.1-0.9	.32	.32			
	35-45	---	---	---	---	0.06-2	---	---	---	---	---			
Newkirk----------	0-3	55-75	10-25	10-20	1.45-1.55	2-6	0.11-0.15	0.0-2.9	0.7-0.9	.28	.28	1	3	86
	3-16	35-70	10-20	18-35	1.40-1.50	0.6-2	0.13-0.20	3.0-5.9	0.1-0.6	.32	.32			
	16-26	---	---	---	---	0.00-2	---	---	---	---	---			
San Jon----------	0-6	55-75	10-30	10-20	1.30-1.40	2-6	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	3	3	86
	6-24	50-65	5-25	20-30	1.40-1.50	0.6-2	0.14-0.16	0.0-2.9	0.5-1.0	.32	.32			
	24-30	35-50	30-45	15-25	1.40-1.50	0.6-2	0.14-0.16	0.0-2.9	0.1-0.5	.20	.37			
	30-40	---	---	---	---	0.00-0.2	---	---	---	---	---			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
22:														
Chispa-----------	0-11	50-70	10-30	15-20	1.35-1.50	2-6	0.10-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	11-23	30-50	20-50	22-35	1.40-1.50	0.6-2	0.12-0.18	0.0-2.9	0.1-0.7	.28	.32			
	23-60	30-50	20-50	25-35	1.45-1.55	0.6-2	0.14-0.20	0.0-2.9	0.1-0.3	.28	.32			
Redona-----------	0-7	60-75	15-25	10-15	1.35-1.45	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	7-40	40-65	10-35	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.1-1.0	.32	.32			
	40-60	30-65	15-45	18-35	1.45-1.55	0.6-2	0.17-0.19	3.0-5.9	0.1-0.5	.32	.32			
23:														
Minneosa---------	0-8	55-75	15-35	10-15	1.40-1.50	2-6	0.15-0.17	0.0-2.9	0.5-0.9	.55	.55	5	3	86
	8-60	60-100	10-25	0-10	1.40-1.50	2-6	0.09-0.11	0.0-2.9	0.1-0.5	.20	.20			
25:														
Ima--------------	0-4	55-70	15-30	5-18	1.35-1.45	2-6	0.11-0.15	0.0-2.9	1.0-1.8	.28	.32	5	3	86
	4-22	55-72	15-30	8-18	1.45-1.55	2-6	0.11-0.15	0.0-2.9	0.4-0.8	.28	.28			
	22-60	30-65	20-50	15-28	1.50-1.60	0.6-2	0.16-0.18	0.0-2.9	0.1-0.4	.20	.20			
La Lande---------	0-7	55-70	10-25	10-18	1.35-1.45	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	7-36	30-50	25-40	18-35	1.40-1.50	0.6-2	0.16-0.18	3.0-5.9	0.1-1.0	.37	.37			
	36-60	30-50	25-40	18-35	1.40-1.50	0.6-2	0.16-0.18	3.0-5.9	0.0-0.9	.32	.32			
26:														
Tucumcari--------	0-7	35-45	30-45	18-27	1.30-1.40	0.6-2	0.16-0.19	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	7-32	10-40	20-40	35-50	1.25-1.35	0.2-0.6	0.14-0.21	6.0-8.9	0.5-0.9	.32	.32			
	32-60	30-60	15-35	30-45	1.45-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.5	.32	.32			
Montoya----------	0-9	10-20	45-55	30-40	1.40-1.50	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.37	.37	5	4	86
	9-47	15-40	20-40	35-60	1.30-1.40	0.06-0.2	0.14-0.16	6.0-8.9	0.1-1.0	.20	.20			
	47-60	15-40	20-40	30-40	1.40-1.50	0.06-0.2	0.16-0.18	6.0-8.9	0.1-0.5	.20	.20			
27:														
San Jon----------	0-3	35-50	30-45	15-25	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	3	4L	86
	3-24	50-70	10-25	20-30	1.40-1.50	0.6-2	0.14-0.16	0.0-2.9	0.1-1.0	.32	.32			
	24-34	---	---	---	---	0.00-0.2	---	---	---	---	---			
Lacoca-----------	0-8	55-70	15-30	5-18	1.35-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-1.0	.20	.20	1	3	86
	8-18	---	---	---	---	0.2-2	---	---	---	---	---			
Rock outcrop.														

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
28:														
Lacoca-----------	0-12	55-70	15-30	5-18	1.40-1.55	2-6	0.10-0.12	0.0-2.9	0.5-0.9	.15	.28	1	5	56
	12-22	---	---	---	---	0.2-2	---	---	---	---	---			
San Jon----------	0-6	30-45	30-45	18-27	1.40-1.50	0.6-2	0.14-0.16	0.0-2.9	0.5-0.9	.37	.37	3	4L	86
	6-33	15-40	30-45	24-35	1.40-1.50	0.2-0.6	0.13-0.15	3.0-5.9	0.1-0.5	.37	.37			
	33-44	---	---	---	---	0.2-2	---	---	---	---	---			
Rock outcrop.														
29:														
Pojo-------------	0-6	75-95	2-10	5-12	1.35-1.45	6-20	0.09-0.11	0.0-2.9	0.5-1.0	.20	.20	2	2	134
	6-21	60-75	15-30	8-16	1.40-1.50	2-6	0.13-0.15	0.0-2.9	0.1-0.5	.28	.32			
	21-31	---	---	---	---	0.00-0.06	---	---	---	---	---			
Neso-------------	0-2	75-90	2-10	5-10	1.45-1.45	6-20	0.05-0.07	0.0-2.9	1.0-2.0	.05	.17	1	5	56
	2-10	55-75	15-25	10-20	1.40-1.50	2-6	0.07-0.09	0.0-2.9	0.2-1.0	.10	.43			
	10-20	---	---	---	---	0.00-0.06	---	---	---	---	---			
Berwolf----------	0-8	65-90	5-20	5-12	1.35-1.45	2-6	0.09-0.10	0.0-2.9	0.9-2.0	.20	.20	5	2	134
	8-49	55-80	15-35	10-18	1.40-1.50	2-6	0.12-0.14	0.0-2.9	0.5-1.0	.28	.28			
	49-60	55-80	15-35	7-15	1.40-1.50	2-6	0.13-0.15	0.0-2.9	0.1-0.5	.28	.28			
30:														
La Lande---------	0-4	30-45	30-45	15-25	1.15-1.25	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	4-17	30-50	20-45	18-35	1.40-1.50	0.6-2	0.16-0.18	3.0-5.9	0.5-0.9	.37	.37			
	17-60	30-55	20-45	18-30	1.40-1.50	0.6-2	0.15-0.17	0.0-2.9	0.1-0.5	.37	.37			
Chispa-----------	0-8	50-70	10-30	15-20	1.35-1.45	2-6	0.10-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	8-22	30-50	20-50	25-35	1.40-1.50	0.6-2	0.12-0.18	0.0-2.9	0.1-0.7	.28	.32			
	22-60	30-50	20-50	25-35	1.40-1.50	0.6-2	0.12-0.18	0.0-2.9	0.1-0.3	.28	.32			
32:														
Regnier----------	0-8	35-45	32-45	18-27	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.5-1.0	.37	.43	2	4L	86
	8-12	25-55	20-45	18-35	1.45-1.55	0.2-0.6	0.14-0.16	3.0-5.9	0.1-0.5	.32	.32			
	12-22	---	---	---	---	0.00-0.6	---	---	---	---	---			
Lacoca-----------	0-5	55-70	15-30	5-18	1.35-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-1.0	.20	.20	1	3	86
	5-15	---	---	---	---	0.00-0.6	---	---	---	---	---			
Rock outcrop.														

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
33:														
Redona-----------	0-5	35-50	35-45	10-25	1.30-1.40	0.6-2	0.15-0.17	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	5-33	25-60	20-45	18-35	1.40-1.50	0.6-2	0.17-0.19	3.0-5.9	0.1-1.0	.32	.32			
	33-60	25-60	20-45	18-35	1.40-1.50	0.6-2	0.17-0.19	3.0-5.9	0.1-0.5	.32	.32			
Hilken-----------	0-7	35-50	35-45	7-16	1.35-1.45	2-6	0.14-0.16	0.0-2.9	1.0-2.0	.55	.55	2	5	56
	7-22	30-50	25-45	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.3-0.7	.32	.32			
	22-34	50-65	10-25	20-35	1.40-1.50	0.6-2	0.06-0.09	3.0-5.9	0.1-0.5	.15	.37			
	34-45	---	---	---	---	0.00-0.06	---	---	---	---	---			
34:														
Palo-------------	0-4	55-75	10-30	7-18	1.40-1.50	2-6	0.11-0.13	0.0-2.9	0.5-1.0	.28	.32	1	3	86
	4-14	25-60	15-40	18-35	1.40-1.50	0.6-2	0.13-0.17	3.0-5.9	0.1-0.5	.32	.37			
	14-24	---	---	---	---	0.00-0.06	---	---	---	---	---			
Neso-------------	0-6	55-75	15-25	10-20	1.35-1.45	2-6	0.10-0.12	0.0-2.9	1.0-2.0	.15	.28	1	4	86
	6-13	55-75	15-25	10-20	1.40-1.50	2-6	0.07-0.09	0.0-2.9	0.2-1.0	.10	.43			
	13-23	---	---	---	---	0.00-0.06	---	---	---	---	---			
35:														
Hassell----------	0-12	30-40	25-40	30-40	1.20-1.30	0.2-0.6	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4	86
	12-22	20-40	25-40	35-50	1.40-1.50	0.06-0.2	0.16-0.20	6.0-8.9	0.1-0.7	.37	.37			
	22-37	15-50	25-50	35-50	1.40-1.50	0.06-0.2	0.16-0.20	6.0-8.9	0.0-0.5	.37	.37			
	37-47	---	---	---	---	0.00-0.6	---	---	---	---	---			
Regnier----------	0-12	35-45	32-45	28-35	1.40-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.5-1.0	.32	.37	2	4L	86
	12-18	25-50	20-45	18-35	1.45-1.55	0.2-0.6	0.14-0.16	3.0-5.9	0.1-0.5	.32	.32			
	18-28	---	---	---	---	0.00-0.6	---	---	---	---	---			
36:														
Alama------------	0-3	5-20	55-75	18-27	1.20-1.30	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43	.43	5	4L	86
	3-28	5-30	40-75	18-35	1.40-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.5-1.0	.37	.37			
	28-60	5-30	40-75	18-35	1.40-1.50	0.2-0.6	0.17-0.20	3.0-5.9	0.1-0.5	.37	.37			
37:														
Hollomex---------	0-2	30-50	30-50	10-15	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.7-1.8	.37	.37	5	4L	86
	2-60	---	---	---	---	0.2-2	---	---	0.1-0.8	---	---			
Reeves-----------	0-3	55-75	10-30	15-20	1.40-1.50	2-6	0.11-0.13	0.0-2.9	0.4-0.6	.28	.28	5	3	86
	3-24	35-45	30-45	18-30	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.1-0.3	.37	.37			
	24-32	35-45	30-45	18-30	1.25-1.40	0.6-2	0.15-0.17	3.0-5.9	0.1-0.3	.37	.37			
	32-60	---	---	---	---	0.2-2	---	---	0.0-0.2	---	---			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
50:														
Conger-----------	0-13	30-50	30-50	18-27	1.30-1.50	0.6-2	0.14-0.20	0.0-2.9	1.0-2.5	.37	.37	1	4L	86
	13-23	---	---	---	---	0.00-0.06	---	---	---	---	---			
Hilken-----------	0-6	35-50	35-50	7-16	1.35-1.45	2-6	0.14-0.16	0.0-2.9	1.0-2.0	.55	.55	2	5	56
	6-31	30-60	20-45	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.1-0.7	.32	.32			
	31-41	---	---	---	---	0.00-0.06	---	---	---	---	---			
55:														
Conger-----------	0-18	30-50	30-50	18-27	1.30-1.50	0.6-2	0.14-0.20	0.0-2.9	1.0-2.5	.37	.37	1	4L	86
	18-28	---	---	---	---	0.00-0.06	---	---	---	---	---			
Redona-----------	0-5	35-50	35-45	10-25	1.30-1.40	0.6-2	0.15-0.17	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	5-23	30-55	20-45	18-35	1.45-1.55	0.6-2	0.17-0.19	3.0-5.9	0.1-1.0	.32	.32			
	23-60	30-60	20-45	18-35	1.40-1.50	0.6-2	0.17-0.19	3.0-5.9	0.0-0.5	.32	.32			
56:														
Karde------------	0-9	35-45	35-45	10-25	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.7-1.0	.37	.37	5	4L	86
	9-19	20-35	35-45	28-35	1.45-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.3-0.6	.32	.32			
	19-33	5-15	50-65	28-40	1.50-1.60	0.2-0.6	0.19-0.21	3.0-5.9	0.2-0.3	.37	.37			
	33-60	20-30	30-45	28-35	1.45-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.2	.32	.32			
57:														
Tuloso-----------	0-2	55-75	10-30	7-18	1.45-1.55	2-6	0.06-0.08	0.0-2.9	1.0-2.0	.10	.43	1	5	56
	2-11	55-75	10-30	7-18	1.45-1.55	2-6	0.06-0.08	0.0-2.9	0.3-0.7	.10	.43			
	11-21	---	---	---	---	0.2-2	---	---	---	---	---			
Flugle-----------	0-6	55-75	10-30	10-17	1.45-1.55	2-6	0.11-0.13	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	6-31	40-65	10-35	20-35	1.45-1.55	0.6-2	0.16-0.18	3.0-5.9	0.4-0.8	.37	.37			
	31-60	55-70	10-30	10-20	1.45-1.55	0.6-2	0.11-0.13	0.0-2.9	0.1-0.4	.24	.24			
58:														
Deama------------	0-7	30-50	30-45	18-27	1.30-1.40	0.6-2	0.12-0.14	0.0-2.9	1.0-3.0	.20	.43	1	5	56
	7-14	30-50	30-45	18-27	1.40-1.50	0.6-2	0.05-0.08	0.0-2.9	0.5-1.0	.10	.37			
	14-17	55-70	15-30	10-18	1.40-1.50	0.6-2	0.05-0.08	0.0-2.9	0.2-0.5	.17	.64			
	17-27	---	---	---	---	0.00-0.2	---	---	---	---	---			
70:														
Manzano----------	0-11	35-50	30-45	10-25	1.20-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-3.0	.37	.37	5	5	56
	11-21	30-50	20-40	18-34	1.40-1.50	0.6-2	0.16-0.21	3.0-5.9	0.2-1.2	.37	.37			
	21-41	45-65	10-32	18-34	1.45-1.55	0.2-0.6	0.15-0.17	3.0-5.9	0.2-1.0	.32	.32			
	41-60	25-50	25-55	18-34	1.50-1.60	0.2-0.6	0.16-0.20	3.0-5.9	0.2-1.0	.32	.32			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
71:														
Clovis-----------	0-8	60-75	10-30	10-17	1.40-1.50	0.6-2	0.13-0.15	0.0-2.9	0.7-0.9	.28	.28	5	3	86
	8-29	30-50	20-50	20-35	1.45-1.55	0.6-2	0.14-0.18	3.0-5.9	0.1-0.7	.32	.32			
	29-60	30-50	20-50	20-35	1.45-1.55	0.6-2	0.15-0.20	3.0-5.9	0.1-0.5	.37	.37			
72:														
Harvey-----------	0-4	55-70	15-30	15-25	1.15-1.25	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.49	5	4L	86
	4-19	30-60	20-40	18-35	1.40-1.50	0.6-2	0.14-0.18	3.0-5.9	0.1-1.0	.37	.37			
	19-60	30-60	20-40	18-35	1.40-1.50	0.6-2	0.14-0.18	3.0-5.9	0.1-1.0	.37	.37			
Darvey-----------	0-6	30-50	20-40	20-27	1.30-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	6-25	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37	.37			
	25-60	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.1-0.5	.37	.37			
73:														
Winona-----------	0-4	55-70	13-25	15-20	1.35-1.45	2-6	0.06-0.08	0.0-2.9	1.0-2.0	.10	.37	1	6	48
	4-12	35-45	32-45	15-25	1.40-1.50	0.6-2	0.07-0.09	0.0-2.9	0.1-0.9	.10	.37			
	12-22	---	---	---	---	0.00-0.06	---	---	---	---	---			
Gabaldon---------	0-4	5-25	55-75	15-25	1.15-1.25	0.2-0.6	0.16-0.20	0.0-2.9	1.0-3.0	.43	.43	5	4L	86
	4-25	5-25	45-75	18-35	1.35-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.1-0.8	.37	.37			
	25-60	5-25	45-75	18-35	1.35-1.45	0.2-0.6	0.17-0.21	3.0-5.9	0.1-0.5	.37	.37			
75:														
Pastura----------	0-3	35-45	30-45	20-30	1.15-1.25	0.6-2	0.17-0.20	3.0-5.9	1.0-2.0	.37	.37	1	4L	86
	3-10	35-45	30-45	18-35	1.20-1.30	0.6-2	0.14-0.16	3.0-5.9	0.1-1.0	.28	.37			
	10-20	---	---	---	---	0.00-0.2	---	---	---	---	---			
Silver-----------	0-6	35-45	30-45	20-27	1.25-1.35	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	6-48	20-40	25-40	35-50	1.40-1.50	0.06-0.2	0.15-0.20	6.0-8.9	0.1-1.0	.32	.32			
	48-60	20-40	25-40	35-50	1.35-1.45	0.06-0.2	0.15-0.20	6.0-8.9	0.1-0.5	.32	.32			
Gabaldon---------	0-11	5-25	55-75	15-25	1.15-1.25	0.2-0.6	0.16-0.20	0.0-2.9	1.0-3.0	.43	.43	5	4L	86
	11-25	5-25	45-75	18-35	1.35-1.45	0.2-0.6	0.16-0.20	3.0-5.9	0.1-0.8	.37	.37			
	25-60	5-25	45-75	18-35	1.40-1.50	0.2-0.6	0.18-0.22	3.0-5.9	0.1-0.5	.37	.37			
76:														
Pastura----------	0-5	55-70	20-35	5-15	1.35-1.45	2-6	0.12-0.14	0.0-2.9	1.0-2.0	.28	.28	1	3	86
	5-15	35-45	30-45	18-35	1.20-1.30	0.6-2	0.14-0.16	3.0-5.9	0.1-1.0	.28	.37			
	15-26	---	---	---	---	0.00-0.2	---	---	---	---	---			
Clovis-----------	0-5	60-75	10-30	10-17	1.40-1.50	0.6-2	0.13-0.15	0.0-2.9	0.7-0.9	.28	.28	5	3	86
	5-21	30-50	20-50	20-35	1.45-1.55	0.6-2	0.15-0.19	3.0-5.9	0.1-0.7	.32	.32			
	21-60	30-50	20-50	20-35	1.40-1.50	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.32	.32			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
77:														
Cardenas---------	0-4	75-90	0-10	8-12	1.50-1.60	6-20	0.09-0.10	0.0-2.9	0.8-1.0	.20	.20	1	2	134
	4-14	60-75	10-30	8-18	1.40-1.50	2-6	0.12-0.14	0.0-2.9	0.1-0.8	.28	.37			
	14-24	---	---	---	---	0.00-0.2	---	---	---	---	---			
Palma------------	0-5	75-95	0-10	5-10	1.70-1.75	6-20	0.06-0.11	0.0-2.9	0.4-0.6	.20	.20	5	2	134
	5-21	55-75	10-25	10-18	1.65-1.70	2-6	0.13-0.17	0.0-2.9	0.2-0.4	.28	.28			
	21-60	55-75	20-30	5-15	1.65-1.70	2-6	0.11-0.14	0.0-2.9	0.1-0.2	.24	.24			
79:														
Travessilla------	0-6	40-50	35-45	5-18	1.35-1.45	2-6	0.13-0.15	0.0-2.9	1.0-2.0	.20	.32	1	5	56
	6-13	40-50	35-45	10-18	1.35-1.45	2-6	0.13-0.15	0.0-2.9	0.3-1.0	.20	.37			
	13-23	---	---	---	---	0.00-0.2	---	---	---	---	---			
Rock outcrop.														
80:														
Travessilla------	0-6	55-70	14-25	15-20	1.45-1.55	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.28	.28	1	3	86
	6-12	45-70	13-35	15-27	1.45-1.55	2-6	0.08-0.17	0.0-2.9	0.3-1.0	.37	.37			
	12-22	---	---	---	---	0.02-0.2	---	---	---	---	---			
Hagerman---------	0-7	35-50	30-45	20-27	1.25-1.35	0.6-2	0.16-0.18	0.0-2.9	0.8-0.9	.37	.37	2	6	48
	7-36	30-50	20-40	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.1-0.5	.32	.32			
	36-46	---	---	---	---	0.00-0.2	---	---	---	---	---			
Rock outcrop.														
81:														
Darvey-----------	0-4	30-50	20-40	20-27	1.30-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	4-30	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37	.37			
	30-60	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.1-0.5	.37	.37			
Silver-----------	0-6	35-45	30-45	20-27	1.25-1.35	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.43	.43	5	6	48
	6-26	20-40	25-40	35-50	1.40-1.50	0.2-0.6	0.15-0.20	6.0-8.9	0.1-1.0	.37	.37			
	26-35	20-40	25-40	35-50	1.35-1.45	0.2-0.6	0.13-0.17	6.0-8.9	0.1-0.5	.32	.32			
	35-60	20-40	25-40	35-50	1.40-1.50	0.2-0.6	0.15-0.20	6.0-8.9	0.0-0.3	.37	.37			
82:														
Clovis-----------	0-4	35-50	30-50	15-25	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.9-2.0	.37	.37	5	5	56
	4-23	30-50	20-50	20-35	1.40-1.50	0.6-2	0.14-0.18	3.0-5.9	0.5-0.9	.32	.32			
	23-60	30-50	30-50	9-17	1.45-1.55	0.6-2	0.09-0.12	0.0-2.9	0.1-0.5	.37	.37			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
85:														
Harvey-----------	0-10	30-50	30-45	15-25	1.15-1.25	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.49	5	4L	86
	10-38	30-60	20-40	18-35	1.40-1.50	0.6-2	0.14-0.18	3.0-5.9	0.1-1.0	.37	.37			
	38-60	30-60	15-40	18-35	1.40-1.50	0.6-2	0.15-0.19	3.0-5.9	0.1-1.0	.37	.37			
Dean-------------	0-8	35-50	35-45	10-25	1.30-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.43	5	4L	86
	8-28	45-70	15-30	18-25	1.45-1.55	0.6-2	0.10-0.14	0.0-2.9	0.1-0.7	.20	.32			
	28-60	35-50	35-45	10-25	1.30-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.43			
86:														
Palma------------	0-8	80-90	0-10	5-10	1.70-1.75	6-20	0.06-0.11	0.0-2.9	0.4-0.6	.20	.20	5	2	134
	8-35	55-75	10-25	10-18	1.65-1.70	2-6	0.13-0.17	0.0-2.9	0.2-0.4	.28	.28			
	35-60	55-75	15-30	5-15	1.65-1.70	2-6	0.11-0.14	0.0-2.9	0.1-0.2	.24	.24			
89:														
Clovis-----------	0-7	35-50	30-50	15-25	1.40-1.50	0.6-2	0.16-0.18	0.0-2.9	0.9-2.0	.37	.37	5	5	56
	7-31	30-50	20-50	20-35	1.40-1.50	0.6-2	0.14-0.18	3.0-5.9	0.5-0.9	.32	.32			
	31-60	30-50	30-50	9-17	1.45-1.55	2-6	0.09-0.12	0.0-2.9	0.1-0.5	.43	.43			
Pastura----------	0-8	35-45	30-45	20-30	1.15-1.25	0.6-2	0.17-0.20	3.0-5.9	1.0-2.0	.37	.37	1	4L	86
	8-15	35-45	30-45	18-35	1.20-1.30	0.6-2	0.14-0.16	3.0-5.9	0.1-1.0	.28	.37			
	15-25	---	---	---	---	0.2-2	---	---	---	---	---			
91:														
Pastura----------	0-4	35-45	30-45	20-30	1.15-1.25	0.6-2	0.17-0.20	3.0-5.9	1.0-2.0	.37	.37	1	4L	86
	4-14	35-45	30-45	18-35	1.20-1.30	0.6-2	0.14-0.16	3.0-5.9	0.1-1.0	.28	.37			
	14-24	---	---	---	---	0.2-2	---	---	---	---	---			
Harvey-----------	0-6	50-70	10-30	10-20	1.35-1.45	2-6	0.11-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	6-26	30-60	15-40	18-35	1.45-1.55	0.6-2	0.15-0.18	3.0-5.9	0.1-1.0	.37	.37			
	26-60	30-60	20-40	18-35	1.40-1.50	0.6-2	0.15-0.18	3.0-5.9	0.1-1.0	.37	.37			
92:														
Winona-----------	0-4	55-70	13-25	15-20	1.35-1.45	2-6	0.06-0.08	0.0-2.9	1.0-2.0	.10	.37	1	6	48
	4-14	35-45	32-45	15-25	1.40-1.50	0.6-2	0.07-0.09	0.0-2.9	0.1-0.9	.10	.37			
	14-24	---	---	---	---	0.00-0.2	---	---	---	---	---			
Rock outcrop.														
93:														
Pastura----------	0-9	35-45	30-45	20-30	1.15-1.25	0.6-2	0.17-0.20	3.0-5.9	1.0-2.0	.37	.37	1	4L	86
	9-15	35-45	30-45	18-35	1.20-1.30	0.6-2	0.14-0.16	3.0-5.9	0.1-1.0	.28	.37			
	15-25	---	---	---	---	0.2-2	---	---	---	---	---			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
94:														
Palma------------	0-5	55-75	10-25	10-20	1.30-1.40	2-6	0.13-0.17	0.0-2.9	0.7-0.9	.28	.28	5	3	86
	5-23	55-75	10-25	10-18	1.65-1.70	2-6	0.13-0.17	0.0-2.9	0.2-0.5	.28	.28			
	23-60	55-75	20-30	5-15	1.65-1.70	2-6	0.11-0.14	0.0-2.9	0.1-0.2	.24	.24			
95:														
Flugle-----------	0-6	75-90	0-15	5-10	1.45-1.55	6-20	0.09-0.10	0.0-2.9	1.0-3.0	.20	.20	5	2	134
	6-20	55-75	10-30	10-18	1.45-1.55	2-6	0.11-0.13	0.0-2.9	0.4-0.8	.28	.28			
	20-42	45-65	10-35	20-35	1.45-1.55	0.6-2	0.16-0.18	3.0-5.9	0.2-0.5	.37	.37			
	42-60	55-75	10-25	10-20	1.45-1.55	0.6-2	0.11-0.13	0.0-2.9	0.1-0.3	.24	.24			
96:														
Mido-------------	0-11	75-90	2-18	2-10	1.40-1.50	6-20	0.08-0.10	0.0-2.9	0.5-1.0	.20	.20	2	2	134
	11-60	75-90	10-19	3-8	1.40-1.50	6-20	0.05-0.09	0.0-2.9	0.1-0.5	.20	.20			
97:														
Bond-------------	0-3	50-75	10-30	10-20	1.35-1.45	2-6	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	3	86
	3-14	30-55	20-45	20-35	1.25-1.35	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.32	.32			
	14-24	---	---	---	---	0.00-0.2	---	---	---	---	---			
Hagerman---------	0-7	35-50	30-45	20-27	1.25-1.35	0.6-2	0.16-0.18	0.0-2.9	0.8-0.9	.37	.37	2	6	48
	7-28	30-55	20-40	18-35	1.40-1.50	0.6-2	0.15-0.17	3.0-5.9	0.1-0.5	.32	.32			
	28-38	---	---	---	---	0.00-0.2	---	---	---	---	---			
98:														
La Fonda---------	0-20	55-75	10-30	10-15	1.40-1.50	2-6	0.13-0.15	0.0-2.9	0.7-0.9	.28	.28	5	3	86
	20-38	40-65	10-35	18-35	1.45-1.55	0.6-2	0.16-0.19	3.0-5.9	0.1-0.6	.32	.32			
	38-60	40-65	10-35	18-35	1.45-1.55	0.6-2	0.16-0.19	3.0-5.9	0.1-0.6	.32	.32			
Palma------------	0-3	55-75	10-25	10-20	1.30-1.40	2-6	0.13-0.17	0.0-2.9	0.7-0.9	.28	.28	5	3	86
	3-56	55-75	10-25	10-18	1.65-1.70	2-6	0.13-0.17	0.0-2.9	0.2-0.5	.28	.28			
	56-60	55-75	20-30	5-15	1.65-1.70	2-6	0.11-0.14	0.0-2.9	0.1-0.2	.24	.24			
101:														
Mido-------------	0-12	75-90	2-18	2-10	1.40-1.50	6-20	0.08-0.10	0.0-2.9	0.5-1.0	.20	.20	2	2	134
	12-60	75-90	10-19	3-8	1.40-1.50	6-20	0.05-0.09	0.0-2.9	0.1-0.5	.20	.20			
105:														
Manzano----------	0-9	35-50	35-45	10-25	1.20-1.30	0.6-2	0.16-0.18	0.0-2.9	2.0-3.0	.37	.37	5	5	56
	9-21	35-50	25-45	18-34	1.40-1.50	0.6-2	0.16-0.21	3.0-5.9	0.2-1.2	.37	.37			
	21-29	30-50	25-45	25-35	1.45-1.55	0.2-0.6	0.15-0.19	3.0-5.9	0.2-1.2	.32	.32			
	29-60	30-50	25-45	25-35	1.45-1.55	0.2-0.6	0.15-0.19	3.0-5.9	0.1-0.5	.32	.32			
106:														
Darvey-----------	0-10	30-50	20-40	20-27	1.30-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	10-37	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.5-1.0	.37	.37			
	37-60	30-50	20-40	20-35	1.40-1.50	0.6-2	0.17-0.20	3.0-5.9	0.1-0.5	.37	.37			

Table 16.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
107:														
Rune-------------	0-19	30-40	20-40	30-40	1.30-1.55	0.2-0.6	0.19-0.21	3.0-5.9	2.0-4.0	.32	.32	5	4L	86
	19-60	20-40	20-40	30-55	1.35-1.65	0.00-0.06	0.14-0.16	6.0-8.9	0.3-2.0	.32	.32			
111:														
La Lande---------	0-12	30-45	30-45	15-25	1.15-1.25	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	12-37	30-55	20-45	18-35	1.40-1.50	0.6-2	0.16-0.18	3.0-5.9	0.5-0.9	.37	.37			
	37-60	45-70	10-35	18-30	1.40-1.50	0.6-2	0.15-0.17	0.0-2.9	0.1-0.5	.37	.37			
112:														
Ima--------------	0-10	55-70	10-30	5-18	1.40-1.50	2-6	0.11-0.13	0.0-2.9	1.0-1.8	.24	.24	5	3	86
	10-32	55-72	10-30	8-18	1.45-1.55	2-6	0.11-0.15	0.0-2.9	0.1-0.7	.28	.28			
	32-60	55-72	10-30	8-18	1.45-1.55	2-6	0.11-0.15	0.0-2.9	0.1-0.2	.28	.28			
114:														
Alama------------	0-7	5-20	55-75	18-27	1.20-1.30	0.6-2	0.17-0.20	0.0-2.9	1.0-2.0	.43	.43	5	4L	86
	7-60	5-30	40-75	18-35	1.40-1.50	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.5	.37	.37			
116:														
Bluhol-----------	0-4	35-50	35-50	10-20	1.55-1.65	0.6-2	0.12-0.14	0.0-2.9	2.0-5.0	.37	.37	5	4L	86
	4-60	---	---	---	1.40-1.50	0.6-2	---	0.0-2.9	0.2-1.0	---	---			
120:														
Sparks-----------	0-8	35-45	30-45	18-27	1.30-1.35	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	8-39	25-40	25-40	35-50	1.60-1.65	0.06-0.2	0.15-0.19	3.0-5.9	0.5-1.0	.20	.20			
	39-60	25-40	25-40	27-35	1.50-1.55	0.2-0.6	0.19-0.21	3.0-5.9	0.1-0.5	.32	.32			
121:														
Slaughter--------	0-6	30-45	30-40	20-27	1.30-1.50	0.6-2	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	1	6	48
	6-16	20-40	25-40	35-45	1.30-1.50	0.2-0.6	0.13-0.19	3.0-5.9	0.3-0.8	.32	.32			
	16-26	---	---	---	---	0.00-0.2	---	---	---	---	---			
DAM.														
Dam														
W.														
Water														

Table 17.—Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equiva-lent	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
10:							
Regnier--------	0-3	8.0-20	7.4-8.4	10-25	0-5	0.0-2.0	0-1
	3-12	10-25	7.4-8.4	15-30	0-5	0.0-4.0	0-3
	12-22	---	---	---	---	---	---
Rock outcrop.							
Lacoca---------	0-8	3.0-15	7.9-8.4	5-30	0-2	0.0-2.0	0-1
	8-18	---	---	---	---	---	---
11:							
Tucumcari------	0-5	15-25	6.6-8.4	0-1	0-1	0.0-2.0	0-1
	5-19	15-28	7.4-8.4	0-1	0-1	0.0-2.0	0-1
	19-49	14-30	7.4-8.4	5-30	0-1	0.0-2.0	0-1
	49-60	14-30	7.4-8.4	5-20	0-5	0.0-4.0	0-1
Hassell--------	0-4	15-30	7.4-8.4	0-1	0-2	0.0-2.0	0-1
	4-22	18-35	7.9-8.4	1-10	0-2	0.0-2.0	0-1
	22-32	18-35	7.9-8.4	5-30	0-5	0.0-2.0	0-1
	32-42	---	---	---	---	---	---
13:							
Tucumcari------	0-5	9.0-20	6.6-8.4	0-1	0-1	0.0-2.0	0-1
	5-19	15-28	7.4-8.4	0-1	0-1	0.0-2.0	0-1
	19-49	12-30	7.4-8.4	5-30	0-1	0.0-2.0	0-1
	49-60	15-30	7.4-8.4	5-20	0-5	0.0-4.0	0-1
Redona---------	0-4	7.0-18	7.4-8.4	0-2	0-1	0.0-2.0	0-1
	4-23	15-25	7.4-8.4	0-20	0-1	0.0-2.0	0-1
	23-60	15-22	7.4-8.4	15-35	0-5	0.0-2.0	0-1
14:							
Kolar----------	0-5	5.0-10	7.9-8.4	5-15	0-1	0.0-2.0	0-1
	5-10	5.0-12	7.9-8.4	10-30	0-1	0.0-2.0	0-1
	10-20	---	---	---	---	---	---
Neso-----------	0-4	6.0-15	7.9-8.4	15-40	0-1	0.0-2.0	0-1
	4-12	5.0-15	7.9-8.4	30-60	0-1	0.0-2.0	0-1
	12-22	---	---	---	---	---	---
15:							
Hilken---------	0-3	5.0-15	7.4-7.8	0-1	0-1	0.0-1.0	0-1
	3-21	8.0-23	7.4-8.4	1-10	0	0.0-1.0	0-1
	21-27	9.0-23	7.9-8.4	15-40	0-5	0.0-2.0	0-1
	27-37	---	---	---	---	---	---
Palo-----------	0-4	4.0-15	7.4-7.8	0-1	0-1	0.0-2.0	0-1
	4-11	10-25	7.4-7.8	0-5	0-1	0.0-2.0	0-1
	11-16	10-25	7.9-8.4	5-15	0-1	0.0-2.0	0-1
	16-26	---	---	---	---	---	---

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equiva-lent	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
16:							
Redona---------	0-7	5.0-10	7.4-8.4	0-2	0-1	0.0-2.0	0-1
	7-37	15-25	7.4-8.4	0-5	0-1	0.0-2.0	0-1
	37-60	15-25	7.4-8.4	15-35	0-5	0.0-2.0	0-1
Berwolf--------	0-6	5.0-15	6.6-7.8	0	0	0.0-2.0	0-1
	6-41	5.0-14	6.6-8.4	0-10	0	0.0-2.0	0-1
	41-60	4.0-13	7.9-8.4	15-35	0-2	0.0-2.0	0-1
17:							
Lacoca---------	0-11	3.0-15	7.9-8.4	5-10	0-1	0.0-2.0	0-1
	11-21	---	---	---	---	---	---
Rock outcrop.							
19:							
Gallen---------	0-3	6.0-15	7.4-8.4	5-20	0-1	0.0-2.0	0-1
	3-9	6.0-15	7.4-8.4	5-20	0-1	0.0-2.0	0-1
	9-60	5.0-12	7.4-8.4	15-45	0-10	0.0-2.0	0-2
20:							
Walkon---------	0-5	8.0-15	6.6-7.8	0-1	0	0.0-2.0	0-1
	5-35	9.0-22	7.4-8.4	0-15	0-1	0.0-2.0	0-1
	35-45	---	---	10-30	0-5	0.0-2.0	0-2
Newkirk--------	0-3	5.0-15	6.6-8.4	0-1	0-1	0.0-2.0	0-1
	3-16	10-22	7.4-8.4	1-5	0-2	0.0-2.0	0-1
	16-26	---	---	---	---	---	---
San Jon--------	0-6	6.0-15	7.4-8.4	3-10	0-1	0.0-2.0	0-1
	6-24	9.0-20	7.4-8.4	3-15	0-1	0.0-2.0	0-1
	24-30	9.0-17	7.4-8.4	15-35	0-5	0.0-2.0	0-2
	30-40	---	---	---	---	---	---
22:							
Chispa---------	0-11	11-19	7.9-8.4	2-5	0	0.0-1.0	0-1
	11-23	14-25	7.9-8.4	5-25	0-1	0.0-1.0	0-2
	23-60	14-25	7.9-8.4	15-40	0-2	0.0-1.0	0-2
Redona---------	0-7	5.0-10	7.4-8.4	0-2	0-1	0.0-2.0	0-1
	7-40	15-25	7.4-8.4	5-15	0-1	0.0-2.0	0-1
	40-60	15-25	7.4-8.4	15-35	0-3	0.0-2.0	0-1
23:							
Minneosa-------	0-8	5.0-10	7.9-8.4	0-10	0-1	0.0-2.0	0-1
	8-60	2.0-9.0	7.9-8.4	10-30	0-1	0.0-2.0	0-1
25:							
Ima------------	0-4	4.0-15	7.4-7.8	3-10	0-1	0.0-2.0	0-1
	4-22	4.0-12	7.4-8.4	3-10	0-2	0.0-2.0	0-1
	22-60	8.0-17	7.4-8.4	3-10	0-2	0.0-2.0	0-1
La Lande-------	0-7	6.0-15	7.4-7.8	3-10	0-1	0.0-2.0	0-1
	7-36	8.0-22	7.9-8.4	3-10	0-2	0.0-2.0	0-1
	36-60	8.0-25	7.9-8.4	3-15	0-2	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
26:							
Tucumcari------	0-7	9.0-20	6.6-8.4	0-3	0-1	0.0-2.0	0-1
	7-32	18-33	7.4-8.4	3-15	0-1	0.0-4.0	0-1
	32-60	15-31	7.4-8.4	15-30	0-5	0.0-4.0	0-5
Montoya--------	0-9	15-30	7.4-8.4	3-15	0-2	2.0-8.0	0-2
	9-47	15-42	7.4-8.4	3-15	0-5	2.0-8.0	1-5
	47-60	15-35	7.4-8.4	3-20	0-5	2.0-8.0	1-5
27:							
San Jon--------	0-3	8.0-20	7.4-8.4	3-25	0-1	0.0-2.0	0-1
	3-24	9.0-20	7.4-8.4	15-40	0-5	0.0-2.0	0-2
	24-34	---	---	---	---	---	---
Lacoca---------	0-8	3.0-15	7.9-8.4	5-20	0-5	0.0-2.0	0-1
	8-18	---	---	---	---	---	---
Rock outcrop.							
28:							
Lacoca---------	0-12	3.0-15	7.9-8.4	5-15	0-1	0.0-2.0	0-1
	12-22	---	---	---	---	---	---
San Jon--------	0-6	8.0-20	7.4-9.0	3-10	0-1	0.0-2.0	0-1
	6-33	11-24	7.4-9.0	15-35	0-3	0.0-2.0	0-1
	33-44	---	---	---	---	---	---
Rock outcrop.							
29:							
Pojo-----------	0-6	3.0-9.0	6.6-8.4	0-1	0-1	0.0-2.0	0-1
	6-21	4.5-12	6.6-8.4	3-20	0-1	0.0-2.0	0-1
	21-31	---	---	---	---	---	---
Neso-----------	0-2	4.0-10	7.9-8.4	15-35	0-1	0.0-2.0	0-1
	2-10	5.0-12	7.9-8.4	35-50	0-1	0.0-2.0	0-1
	10-20	---	---	---	---	---	---
Berwolf--------	0-8	4.0-10	6.6-7.8	0	0	0.0-2.0	0-1
	8-49	5.0-14	6.6-8.4	0-10	0	0.0-2.0	0-1
	49-60	4.0-13	7.9-8.4	15-35	0-2	0.0-2.0	0-1
30:							
La Lande-------	0-4	8.0-20	7.4-7.8	3-10	0-1	0.0-2.0	0-1
	4-17	8.0-23	7.9-8.4	3-15	0-1	0.0-2.0	0-1
	17-60	8.0-22	7.9-8.4	3-15	0-2	0.0-2.0	0-1
Chispa---------	0-8	11-19	7.9-8.4	2-5	0	0.0-1.0	0-1
	8-22	14-25	7.9-8.4	5-25	0-2	0.0-1.0	0-1
	22-60	14-25	7.9-8.4	15-45	0-2	0.0-1.0	0-1
32:							
Regnier--------	0-8	8.0-20	7.4-8.4	5-10	0-2	0.0-2.0	0-1
	8-12	10-23	7.4-8.4	15-25	0-5	0.0-4.0	0-1
	12-22	---	---	---	---	---	---
Lacoca---------	0-5	3.0-15	7.9-8.4	5-10	0-1	0.0-2.0	0-1
	5-15	---	---	10-30	0-2	0.0-2.0	0-1
Rock outcrop.							

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equiva-lent	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
33:							
Redona----------	0-5	7.5-18	7.4-8.4	0-2	0-1	0.0-2.0	0-1
	5-33	18-28	7.4-8.4	0-15	0-1	0.0-2.0	0-1
	33-60	18-28	7.4-8.4	15-35	0-5	0.0-2.0	0-1
Hilken----------	0-7	5.0-15	7.4-7.8	0-1	0-1	0.0-2.0	0-1
	7-22	10-22	7.4-8.4	0-10	0-1	0.0-2.0	0-1
	22-34	10-22	7.9-8.4	15-40	0-5	0.0-2.0	0-1
	34-45	---	---	---	---	---	---
34:							
Palo------------	0-4	4.0-15	7.4-7.8	0-1	0-1	0.0-2.0	0-1
	4-14	9.0-23	7.4-7.8	0-15	0-1	0.0-2.0	0-1
	14-24	---	---	---	---	0.0-2.0	---
Neso------------	0-6	6.0-15	7.9-8.4	15-35	0-1	0.0-2.0	0-1
	6-13	5.0-12	7.9-8.4	35-40	0-1	0.0-2.0	0-1
	13-23	---	---	---	---	---	---
35:							
Hassell---------	0-12	15-30	7.9-8.4	0-3	0-2	0.0-2.0	0-1
	12-22	16-35	7.9-8.4	5-30	1-10	0.0-2.0	0-1
	22-37	16-35	7.9-8.4	5-30	0-5	0.0-2.0	0-1
	37-47	---	---	---	---	---	---
Regnier---------	0-12	14-25	7.4-8.4	5-10	0-5	0.0-2.0	0-1
	12-18	12-23	7.4-8.4	15-35	0-5	0.0-4.0	0-1
	18-28	---	---	---	---	---	---
36:							
Alama-----------	0-3	12-26	7.4-8.4	0-5	0-1	0.0-2.0	0-1
	3-28	11-26	7.4-8.4	5-10	0-1	0.0-2.0	0-1
	28-60	11-26	7.9-8.4	5-15	0-2	0.0-2.0	0-1
37:							
Hollomex--------	0-2	5.0-10	7.4-8.4	5-15	30-65	1.0-4.0	0-1
	2-60	---	---	2-10	40-65	2.0-8.0	0-1
Reeves----------	0-3	7.0-15	7.9-9.0	10-25	0-5	2.0-8.0	0-1
	3-24	7.0-20	7.4-9.0	15-25	5-20	2.0-8.0	0-1
	24-32	7.0-20	7.4-9.0	15-25	40-80	2.0-8.0	0-1
	32-60	---	7.4-9.0	15-25	40-80	2.0-8.0	0-2
50:							
Conger----------	0-13	10-22	7.9-8.4	5-20	0	0.0-2.0	0-1
	13-23	---	---	---	---	---	---
Hilken----------	0-6	5.0-15	7.4-7.8	0-1	0-1	0.0-2.0	0-1
	6-31	8.0-22	7.4-8.4	15-35	0-1	0.0-2.0	0-1
	31-41	---	---	---	---	---	---
55:							
Conger----------	0-18	10-22	7.9-8.4	10-20	0-1	0.0-2.0	0-1
	18-28	---	---	---	---	---	---
Redona----------	0-5	5.0-17	7.4-8.4	0-2	0-1	0.0-2.0	0-1
	5-23	15-25	7.4-8.4	0-10	0-1	0.0-2.0	0-1
	23-60	15-25	7.4-8.4	15-35	0-1	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
56:							
Karde----------	0-9	7.0-18	7.9-8.4	3-10	1-5	0.0-2.0	0-1
	9-19	14-24	7.9-8.4	15-30	2-10	2.0-4.0	0-1
	19-33	15-30	7.9-8.4	15-30	2-10	2.0-4.0	1-5
	33-60	14-24	8.5-9.0	30-60	5-15	2.0-4.0	2-7
57:							
Tuloso---------	0-2	5.0-15	6.6-8.4	0-1	0	0.0-2.0	0-1
	2-11	4.0-12	6.6-8.4	0-1	0	0.0-2.0	0-1
	11-21	---	---	---	---	---	---
Flugle---------	0-6	6.0-15	6.6-7.3	0-1	0	0.0-2.0	0
	6-31	11-25	6.6-8.4	0-5	0-1	0.0-2.0	0-1
	31-60	5.0-12	7.4-8.4	1-5	0-1	0.0-2.0	0-1
58:							
Deama----------	0-7	9.0-20	7.4-8.4	40-60	0-2	0.0-2.0	0-1
	7-14	8.0-19	7.4-8.4	40-60	0-2	0.0-2.0	0-1
	14-17	5.0-12	7.4-8.4	40-60	0-2	0.0-2.0	0-1
	17-27	---	---	---	---	---	---
70:							
Manzano--------	0-11	9.0-22	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	11-21	8.0-22	7.4-8.4	0-10	0-1	0.0-2.0	0-1
	21-41	8.0-22	7.4-8.4	5-15	0-1	0.0-2.0	0-1
	41-60	12-28	7.4-8.4	5-15	0-1	0.0-2.0	0-1
71:							
Clovis---------	0-8	9.0-17	7.4-8.4	0-1	0-1	0.0-2.0	0-1
	8-29	15-30	6.6-8.4	0-7	0-1	0.0-2.0	0-1
	29-60	13-27	6.6-8.4	15-30	0-1	0.0-2.0	0-1
72:							
Harvey---------	0-4	8.0-20	7.4-8.4	5-20	0-1	0.0-2.0	0-1
	4-19	10-24	7.9-8.4	20-50	0-1	0.0-2.0	0-1
	19-60	10-24	7.9-8.4	15-40	0-1	0.0-2.0	0-1
Darvey---------	0-6	11-22	7.9-8.4	5-10	0	0.0-2.0	0-1
	6-25	16-27	7.9-8.4	10-15	0	0.0-2.0	0-1
	25-60	16-27	7.9-8.4	15-50	0-3	0.0-2.0	0-1
73:							
Winona---------	0-4	8.0-15	7.9-8.4	40-60	0-1	0.0-1.0	0-1
	4-12	8.0-19	7.9-8.4	40-60	0-1	0.0-1.0	0-1
	12-22	---	---	---	---	---	---
Gabaldon-------	0-4	8.0-20	6.6-8.4	1-10	0-1	0.0-2.0	0-1
	4-25	10-25	6.6-8.4	1-10	0-1	0.0-2.0	0-1
	25-60	11-25	6.6-8.4	5-20	0-1	0.0-2.0	0-1
75:							
Pastura--------	0-3	10-20	7.9-8.4	10-20	0	0.0-2.0	0-1
	3-10	10-22	7.9-8.4	15-40	0-1	0.0-2.0	0-1
	10-20	---	---	---	---	---	---
Silver---------	0-6	10-20	7.4-8.4	0-5	0	0.0-2.0	0-1
	6-48	20-38	7.4-8.4	1-15	0-1	0.0-2.0	0-1
	48-60	16-32	7.4-8.4	5-20	0-1	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equiva-lent	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
75:							
Gabaldon-------	0-11	8.0-20	6.6-8.4	1-10	0	0.0-2.0	0-1
	11-25	8.0-22	6.6-8.4	1-10	0-1	0.0-2.0	0-1
	25-60	8.0-23	6.6-8.4	5-15	0-1	0.0-2.0	0-1
76:							
Pastura--------	0-5	4.0-15	7.9-8.4	10-30	0-1	0.0-2.0	0-1
	5-15	8.0-22	7.9-8.4	20-40	0-1	0.0-2.0	0-1
	15-26	---	---	---	---	---	---
Clovis---------	0-5	7.0-16	7.4-8.4	0-1	0	0.0-2.0	0-1
	5-21	14-29	6.6-8.4	0-5	0-1	0.0-2.0	0-1
	21-60	14-29	6.6-8.4	15-35	0-2	0.0-2.0	0-1
77:							
Cardenas-------	0-4	6.0-10	7.4-7.8	2-10	0-2	0.0-2.0	0-1
	4-14	6.0-15	7.9-8.4	15-35	0-2	0.0-2.0	0-1
	14-24	---	---	---	---	---	---
Palma----------	0-5	3.0-8.0	6.6-8.4	0-1	0	0.0-2.0	0-1
	5-21	6.0-12	7.4-8.4	1-5	0-1	0.0-2.0	0-1
	21-60	4.0-10	7.4-8.4	5-30	0-1	0.0-2.0	0-1
79:							
Travessilla----	0-6	4.0-15	6.6-8.4	10-35	0-1	0.0-2.0	0-1
	6-13	5.0-12	6.6-8.4	10-35	0-1	0.0-2.0	0-1
	13-23	---	---	---	---	---	---
Rock outcrop.							
80:							
Travessilla----	0-6	7.0-15	7.4-8.4	10-35	0-1	0.0-2.0	0-1
	6-12	7.0-17	7.4-8.4	10-40	0-1	0.0-2.0	0-1
	12-22	---	---	---	---	---	---
Hagerman-------	0-7	15-20	7.4-8.4	0-5	0-1	0.0-2.0	0-1
	7-36	11-22	6.6-8.4	2-10	0-1	0.0-2.0	0-1
	36-46	---	---	---	---	---	---
Rock outcrop.							
81:							
Darvey---------	0-4	10-20	7.9-8.4	5-10	0	0.0-2.0	0-1
	4-30	16-27	7.9-8.4	10-15	0	0.0-2.0	0-1
	30-60	16-27	7.9-8.4	15-50	0-3	0.0-2.0	0-1
Silver---------	0-6	10-20	7.4-8.4	0-5	0-1	0.0-2.0	0-1
	6-26	16-32	7.4-8.4	1-15	0-1	0.0-2.0	0-1
	26-35	20-35	7.4-8.4	1-15	0-1	0.0-2.0	0-1
	35-60	16-32	7.4-8.4	5-20	0-1	0.0-2.0	0-1
82:							
Clovis---------	0-4	11-22	6.6-7.8	0	0	0.0-2.0	0-1
	4-23	14-27	6.6-8.4	0-5	0-1	0.0-2.0	0-1
	23-60	7.0-12	7.9-8.4	15-35	0-2	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equiva-lent	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
85:							
Harvey----------	0-10	8.0-20	7.4-8.4	5-25	0-1	0.0-2.0	0-1
	10-38	10-22	7.9-8.4	20-40	0-2	0.0-2.0	0-1
	38-60	10-22	7.9-8.4	10-30	0-2	0.0-2.0	0-1
Dean-----------	0-8	6.0-20	7.9-8.4	15-35	0-1	0.0-1.0	0-1
	8-28	8.0-17	7.9-8.4	30-60	0-2	0.0-2.0	0-1
	28-60	6.0-20	7.9-8.4	30-60	0-2	0.0-2.0	0-1
86:							
Palma----------	0-8	3.0-8.0	6.6-8.4	0	0-1	0.0-2.0	0-1
	8-35	6.0-12	7.4-8.4	1-5	0-1	0.0-2.0	0-1
	35-60	4.0-10	7.4-8.4	5-30	0-1	0.0-2.0	0-1
89:							
Clovis---------	0-7	11-22	6.6-7.8	0	0	0.0-2.0	0-1
	7-31	13-29	6.6-8.4	0-5	0-1	0.0-2.0	0-1
	31-60	8.0-16	7.9-8.4	15-35	0-2	0.0-2.0	0-1
Pastura--------	0-8	10-20	7.9-8.4	10-30	0-1	0.0-2.0	0-1
	8-15	9.0-23	7.9-8.4	15-40	0-1	0.0-2.0	0-1
	15-25	---	---	---	---	---	---
91:							
Pastura--------	0-4	10-20	7.9-8.4	5-10	0	0.0-2.0	0-1
	4-14	9.0-23	7.9-8.4	10-20	0-1	0.0-2.0	0-1
	14-24	---	---	---	---	---	---
Harvey---------	0-6	6.0-15	7.4-8.4	5-25	0-1	0.0-2.0	0-1
	6-26	10-24	7.9-8.4	20-40	0-1	0.0-2.0	0-1
	26-60	8.0-22	7.9-8.4	20-40	0-1	0.0-2.0	0-1
92:							
Winona---------	0-4	8.0-15	7.9-8.4	20-40	0	0.0-1.0	0-1
	4-14	8.0-19	7.9-8.4	40-60	0-1	0.0-1.0	0-1
	14-24	---	---	---	---	---	---
Rock outcrop.							
93:							
Pastura--------	0-9	10-20	7.9-8.4	10-30	0	0.0-2.0	0-1
	9-15	8.0-22	7.9-8.4	15-40	0-1	0.0-2.0	0-1
	15-25	---	---	---	---	---	---
94:							
Palma----------	0-5	6.0-11	6.6-8.4	0-1	0	0.0-2.0	0-1
	5-23	6.0-12	7.4-8.4	1-5	0-1	0.0-2.0	0-1
	23-60	4.0-10	7.4-8.4	10-30	0-1	0.0-2.0	0-1
95:							
Flugle---------	0-6	4.0-10	6.6-7.3	0-1	0	0.0-2.0	0-1
	6-20	5.0-12	6.6-7.3	1-5	0	0.0-2.0	0-1
	20-42	12-23	6.6-8.4	1-5	0-1	0.0-2.0	0-1
	42-60	5.0-12	7.4-8.4	5-15	0-1	0.0-2.0	0-1
96:							
Mido-----------	0-11	2.0-8.0	7.4-8.4	1-5	0	0.0-2.0	0-1
	11-60	2.0-5.0	7.4-8.4	1-10	0-1	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
97:							
Bond	0-3	6.0-16	6.6-7.8	0	0	0.0-2.0	0-1
	3-14	11-26	6.6-8.4	0-4	0-1	0.0-2.0	0-1
	14-24	---	---	---	---	---	---
Hagerman	0-7	15-20	7.4-8.4	0-3	0	0.0-2.0	0-1
	7-28	11-22	6.6-8.4	2-10	0-1	0.0-2.0	0-1
	28-38	---	---	---	---	---	---
98:							
La Fonda	0-20	5.0-10	7.4-8.4	3-10	0	0.0-2.0	0-1
	20-38	10-24	7.4-8.4	3-15	0-1	0.0-2.0	0-1
	38-60	10-24	7.4-8.4	5-17	0-1	0.0-2.0	0-1
Palma	0-3	6.0-14	6.6-8.4	0-1	0	0.0-2.0	0-1
	3-56	6.0-12	7.4-8.4	1-5	0	0.0-2.0	0-1
	56-60	4.0-10	7.4-8.4	5-30	0-1	0.0-2.0	0-1
101:							
Mido	0-12	2.0-8.0	7.4-8.4	1-5	0	0.0-2.0	0-1
	12-60	2.0-5.0	7.4-8.4	1-10	0-1	0.0-2.0	0-1
105:							
Manzano	0-9	8.0-20	6.6-7.8	0-1	0	0.0-2.0	0-1
	9-21	8.0-22	7.4-8.4	2-10	0-1	0.0-2.0	0-1
	21-29	12-25	7.4-8.4	2-15	0-1	0.0-2.0	0-1
	29-60	12-25	7.4-8.4	2-15	0-1	0.0-2.0	0-1
106:							
Darvey	0-10	10-20	7.9-8.4	5-10	0	0.0-2.0	0-1
	10-37	16-27	7.9-8.4	10-15	0	0.0-2.0	0-1
	37-60	16-27	7.9-8.4	15-50	0-3	0.0-2.0	0-1
107:							
Rune	0-19	15-30	7.4-8.4	3-10	0-1	0.0-2.0	0-1
	19-60	21-38	7.4-8.4	5-20	0-3	0.0-2.0	0-2
111:							
La Lande	0-12	8.0-20	7.4-7.8	3-10	0	0.0-2.0	0-1
	12-37	8.0-22	7.9-8.4	2-10	0-2	0.0-2.0	0-1
	37-60	8.0-22	7.9-8.4	5-15	0-2	0.0-2.0	0-1
112:							
Ima	0-10	4.0-17	7.4-8.4	3-10	0-1	0.0-2.0	0-1
	10-32	4.0-12	7.4-8.4	3-10	0-1	0.0-2.0	0-1
	32-60	4.0-12	7.4-8.4	3-20	0-2	0.0-2.0	0-1
114:							
Alama	0-7	12-22	7.4-8.4	3-10	0	0.0-2.0	0-1
	7-60	10-26	7.4-8.4	5-15	0-1	0.0-2.0	0-1
116:							
Bluhol	0-4	8.0-20	6.6-8.4	5-15	5-10	4.0-8.0	0-1
	4-60	---	6.6-7.8	15-40	30-60	4.0-8.0	0-5
120:							
Sparks	0-8	9.0-20	6.6-7.3	0-1	0	0.0-2.0	0-1
	8-39	16-33	6.6-7.8	0-1	0	0.0-2.0	0-1
	39-60	11-23	7.9-8.4	20-35	0-1	0.0-2.0	0-1

Table 17.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
121:							
Slaughter------	0-6	10-20	6.6-8.4	0-1	0	0.0-2.0	0-1
	6-16	16-29	6.6-8.4	0-15	0-1	0.0-2.0	0-1
	16-26	---	---	---	---	---	---
DAM.							
Dam							
W.							
Water							

Table 18.—Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
10:								
Regnier	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop	D							
		Jan-Dec	---	---	---	None	---	None
Lacoca	D							
		Jan-Dec	---	---	---	None	---	None
11:								
Tucumcari	B							
		Jan-Dec	---	---	---	None	---	None
Hassell	C							
		Jan-Dec	---	---	---	None	---	None
13:								
Tucumcari	B							
		Jan-Dec	---	---	---	None	---	None
Redona	B							
		Jan-Dec	---	---	---	None	---	None
14:								
Kolar	D							
		Jan-Dec	---	---	---	None	---	None
Neso	D							
		Jan-Dec	---	---	---	None	---	None
15:								
Hilken	C							
		Jan-Dec	---	---	---	None	---	None
Palo	D							
		Jan-Dec	---	---	---	None	---	None
16:								
Redona	B							
		Jan-Dec	---	---	---	None	---	None
Berwolf	B							
		Jan-Dec	---	---	---	None	---	None
17:								
Lacoca	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop	D							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
19:								
Gallen------------	B							
		Jan-Dec	---	---	---	None	---	None
20:								
Walkon------------	C							
		Jan-Dec	---	---	---	None	---	None
Newkirk-----------	D							
		Jan-Dec	---	---	---	None	---	None
San Jon-----------	C							
		Jan-Dec	---	---	---	None	---	None
22:								
Chispa------------	B							
		Jan-Dec	---	---	---	None	---	None
Redona------------	B							
		Jan-Dec	---	---	---	None	---	None
23:								
Minneosa----------	B							
		April	---	---	---	None	Brief	Occasional
		May	---	---	---	None	Brief	Occasional
		June	---	---	---	None	Brief	Occasional
		July	---	---	---	None	Brief	Occasional
		August	---	---	---	None	Brief	Occasional
		September	---	---	---	None	Brief	Occasional
		October	---	---	---	None	Brief	Occasional
25:								
Ima---------------	B							
		Jan-Dec	---	---	---	None	---	None
La Lande----------	B							
		Jan-Dec	---	---	---	None	---	None
26:								
Tucumcari---------	B							
		Jan-Dec	---	---	---	None	---	None
Montoya-----------	D							
		July	---	---	Very brief	Rare	Brief	Rare
		August	---	---	Very brief	Rare	Brief	Rare
		September	---	---	Very brief	Rare	Brief	Rare
27:								
San Jon-----------	C							
		Jan-Dec	---	---	---	None	---	None
Lacoca------------	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop------	D							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro- logic group	Month	Water table Upper limit	Water table Lower limit	Ponding Duration	Ponding Frequency	Flooding Duration	Flooding Frequency
			Ft	Ft				
28:								
Lacoca	D							
		Jan-Dec	---	---	---	None	---	None
San Jon	C							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop	D							
		Jan-Dec	---	---	---	None	---	None
29:								
Pojo	C							
		Jan-Dec	---	---	---	None	---	None
Neso	D							
		Jan-Dec	---	---	---	None	---	None
Berwolf	B							
		Jan-Dec	---	---	---	None	---	None
30:								
La Lande	B							
		Jan-Dec	---	---	---	None	---	None
Chispa	B							
		Jan-Dec	---	---	---	None	---	None
32:								
Regnier	D							
		Jan-Dec	---	---	---	None	---	None
Lacoca	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop	D							
		Jan-Dec	---	---	---	None	---	None
33:								
Redona	B							
		Jan-Dec	---	---	---	None	---	None
Hilken	C							
		Jan-Dec	---	---	---	None	---	None
34:								
Palo	D							
		Jan-Dec	---	---	---	None	---	None
Neso	D							
		Jan-Dec	---	---	---	None	---	None
35:								
Hassell	C							
		Jan-Dec	---	---	---	None	---	None
Regnier	D							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
36:								
Alama	B							
		Jan-Dec	---	---	---	None	---	None
37:								
Hollomex	B							
		Jan-Dec	---	---	---	None	---	None
Reeves	B							
		Jan-Dec	---	---	---	None	---	None
50:								
Conger	C							
		Jan-Dec	---	---	---	None	---	None
Hilken	C							
		Jan-Dec	---	---	---	None	---	None
55:								
Conger	C							
		Jan-Dec	---	---	---	None	---	None
Redona	B							
		Jan-Dec	---	---	---	None	---	None
56:								
Karde	B							
		Jan-Dec	---	---	---	None	---	None
57:								
Tuloso	D							
		Jan-Dec	---	---	---	None	---	None
Flugle	B							
		Jan-Dec	---	---	---	None	---	None
58:								
Deama	D							
		Jan-Dec	---	---	---	None	---	None
70:								
Manzano	B							
		July	---	---	---	None	Brief	Rare
		August	---	---	---	None	Brief	Rare
		September	---	---	---	None	Brief	Rare
71:								
Clovis	B							
		Jan-Dec	---	---	---	None	---	None
72:								
Harvey	B							
		Jan-Dec	---	---	---	None	---	None
Darvey	B							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
73:								
Winona------------	D							
		Jan-Dec	---	---	---	None	---	None
Gabaldon----------	B							
		July	---	---	Very brief	Rare	Brief	Rare
		August	---	---	Very brief	Rare	Brief	Rare
		September	---	---	Very brief	Rare	Brief	Rare
75:								
Pastura-----------	D							
		Jan-Dec	---	---	---	None	---	None
Silver------------	C							
		Jan-Dec	---	---	---	None	---	None
Gabaldon----------	B							
		July	---	---	---	None	Brief	Rare
		August	---	---	---	None	Brief	Rare
		September	---	---	---	None	Brief	Rare
76:								
Pastura-----------	D							
		Jan-Dec	---	---	---	None	---	None
Clovis------------	B							
		Jan-Dec	---	---	---	None	---	None
77:								
Cardenas----------	D							
		Jan-Dec	---	---	---	None	---	None
Palma-------------	B							
		Jan-Dec	---	---	---	None	---	None
79:								
Travessilla-------	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop------	D							
		Jan-Dec	---	---	---	None	---	None
80:								
Travessilla-------	D							
		Jan-Dec	---	---	---	None	---	None
Hagerman----------	C							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop------	D							
		Jan-Dec	---	---	---	None	---	None
81:								
Darvey------------	B							
		Jan-Dec	---	---	---	None	---	None
Silver------------	C							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
82:								
Clovis	B							
		Jan-Dec	---	---	---	None	---	None
85:								
Harvey	B							
		Jan-Dec	---	---	---	None	---	None
Dean	B							
		Jan-Dec	---	---	---	None	---	None
86:								
Palma	B							
		Jan-Dec	---	---	---	None	---	None
89:								
Clovis	B							
		Jan-Dec	---	---	---	None	---	None
Pastura	D							
		Jan-Dec	---	---	---	None	---	None
91:								
Pastura	D							
		Jan-Dec	---	---	---	None	---	None
Harvey	B							
		Jan-Dec	---	---	---	None	---	None
92:								
Winona	D							
		Jan-Dec	---	---	---	None	---	None
Rock outcrop	D							
		Jan-Dec	---	---	---	None	---	None
93:								
Pastura	D							
		Jan-Dec	---	---	---	None	---	None
94:								
Palma	B							
		Jan-Dec	---	---	---	None	---	None
95:								
Flugle	B							
		Jan-Dec	---	---	---	None	---	None
96:								
Mido	A							
		Jan-Dec	---	---	---	None	---	None
97:								
Bond	D							
		Jan-Dec	---	---	---	None	---	None
Hagerman	C							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table Upper limit	Water table Lower limit	Ponding Duration	Ponding Frequency	Flooding Duration	Flooding Frequency
			Ft	Ft				
98:								
La Fonda----------	B							
		Jan-Dec	---	---	---	None	---	None
Palma-------------	B							
		Jan-Dec	---	---	---	None	---	None
101:								
Mido--------------	A							
		Jan-Dec	---	---	---	None	---	None
105:								
Manzano-----------	B							
		Jan-Dec	---	---	---	None	---	None
106:								
Darvey------------	B							
		Jan-Dec	---	---	---	None	---	None
107:								
Rune--------------	C							
		Jan-Dec	---	---	---	None	---	None
111:								
La Lande----------	B							
		Jan-Dec	---	---	---	None	---	None
112:								
Ima---------------	B							
		Jan-Dec	---	---	---	None	---	None
114:								
Alama-------------	B							
		Jan-Dec	---	---	---	None	---	None
116:								
Bluhol------------	D							
		January	1.0-3.0	>6.0	---	None	---	None
		February	1.0-3.0	>6.0	---	None	---	None
		March	1.0-3.0	>6.0	---	None	---	None
		April	1.0-3.0	>6.0	---	None	---	None
		May	1.0-3.0	>6.0	---	None	---	None
		June	1.0-3.0	>6.0	---	None	---	None
		July	1.0-3.0	>6.0	---	None	---	None
		August	1.0-3.0	>6.0	---	None	---	None
		September	1.0-3.0	>6.0	---	None	---	None
		October	1.0-3.0	>6.0	---	None	---	None
		November	1.0-3.0	>6.0	---	None	---	None
		December	1.0-3.0	>6.0	---	None	---	None
120:								
Sparks------------	C							
		Jan-Dec	---	---	---	None	---	None
121:								
Slaughter---------	C							
		Jan-Dec	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft				
DAM. Dam								
W. Water								

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
10:							
Regnier	Bedrock (paralithic)	12-20	---	Moderately cemented	Low	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
Lacoca	Bedrock (lithic)	4-20	---	---	---	Moderate	Low
11:							
Tucumcari	---	---	---	---	Low	High	Low
Hassell	Bedrock (paralithic)	20-40	---	Moderately cemented	Low	High	Low
13:							
Tucumcari	---	---	---	---	Low	High	Low
Redona	---	---	---	---	Low	Moderate	Low
14:							
Kolar	Petrocalcic	9-20	4-17	Indurated	Low	High	Low
Neso	Petrocalcic	8-14	4-17	Indurated	Low	High	Low
15:							
Hilken	Petrocalcic	20-40	4-17	Indurated	Low	High	Low
Palo	Petrocalcic	9-20	2-9	Indurated	Low	High	Low
16:							
Redona	---	---	---	---	Low	Moderate	Low
Berwolf	---	---	---	---	Low	High	Low
17:							
Lacoca	Bedrock (lithic)	4-20	---	---	---	Moderate	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
19:							
Gallen	---	---	---	---	Low	High	Low

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
20:							
Walkon	Bedrock (lithic)	20-40	---	---	Low	High	Low
Newkirk	Bedrock (lithic)	8-20	---	---	Low	High	Low
San Jon	Bedrock (lithic)	20-40	---	Moderately cemented	Low	High	Low
22:							
Chispa	---	---	---	---	---	High	Low
Redona	---	---	---	---	Low	Moderate	Low
23:							
Minneosa	---	---	---	---	Low	High	Low
25:							
Ima	---	---	---	---	Low	High	Low
La Lande	---	---	---	---	Moderate	High	Low
26:							
Tucumcari	---	---	---	---	Low	High	Low
Montoya	---	---	---	---	Low	High	Low
27:							
San Jon	Bedrock (lithic)	20-40	---	Moderately cemented	Low	High	Low
Lacoca	Bedrock (lithic)	4-20	---	---	---	Moderate	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
28:							
Lacoca	Bedrock (lithic)	4-20	---	---	Low	Moderate	Low
San Jon	Bedrock (lithic)	20-40	---	Moderately cemented	Low	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
29:							
Pojo	Petrocalcic	20-40	4-17	Indurated	Low	High	Low
Neso	Petrocalcic	8-14	4-17	Indurated	Low	High	Low
Berwolf	---	---	---	---	Low	High	Low

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
30:							
La Lande	---	---	---	---	Moderate	High	Low
Chispa	---	---	---	---	---	High	Low
32:							
Regnier	Bedrock (paralithic)	12-20	---	Moderately cemented	Low	High	Low
Lacoca	Bedrock (lithic)	4-20	---	---	---	Moderate	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
33:							
Redona	---	---	---	---	Low	Moderate	Low
Hilken	Petrocalcic	20-40	4-17	Indurated	Low	High	Low
34:							
Palo	Petrocalcic	9-20	2-9	Indurated	Low	High	Low
Neso	Petrocalcic	8-14	4-17	Indurated	Low	High	Low
35:							
Hassell	Bedrock (paralithic)	20-40	---	Moderately cemented	Low	High	Low
Regnier	Bedrock (paralithic)	12-20	---	Moderately cemented	Low	High	Low
36:							
Alama	---	---	---	---	Low	High	Low
37:							
Hollomex	---	---	---	---	Low	High	High
Reeves	---	---	---	---	Low	High	High
50:							
Conger	Petrocalcic	8-20	3-9	Indurated	---	Moderate	Low
Hilken	Petrocalcic	20-40	4-17	Indurated	Low	High	Low
55:							
Conger	Petrocalcic	8-20	3-9	Indurated	---	Moderate	Low
Redona	---	---	---	---	Low	Moderate	Low

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
56:							
Karde	---	---	---	---	Low	High	Low
57:							
Tuloso	Bedrock (lithic)	6-20	---	---	Low	High	Low
Flugle	---	---	---	---	Moderate	High	Low
58:							
Deama	Bedrock (lithic)	6-20	---	---	Low	High	Low
70:							
Manzano	---	---	---	---	Moderate	High	Low
71:							
Clovis	---	---	---	---	Low	High	Low
72:							
Harvey	---	---	---	---	Low	High	Low
Darvey	---	---	---	---	Low	High	Low
73:							
Winona	Bedrock (lithic)	10-20	---	---	Low	High	Low
Gabaldon	---	---	---	---	Moderate	Moderate	Low
75:							
Pastura	Petrocalcic	5-20	4-17	Indurated	Low	High	Low
Silver	---	---	---	---	Low	High	Low
Gabaldon	---	---	---	---	Moderate	Moderate	Low
76:							
Pastura	Petrocalcic	5-20	4-17	Indurated	Low	High	Low
Clovis	---	---	---	---	Low	High	Low
77:							
Cardenas	Petrocalcic	10-20	4-17	Indurated	Moderate	High	Low
Palma	---	---	---	---	Low	High	Low
79:							
Travessilla	Bedrock (lithic)	6-20	---	---	Low	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
80:							
Travessilla	Bedrock (lithic)	4-20	---	---	Low	Moderate	Low
Hagerman	Bedrock (lithic)	20-40	---	---	Low	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
81:							
Darvey	---	---	---	---	Low	High	Low
Silver	---	---	---	---	Low	High	Low
82:							
Clovis	---	---	---	---	Low	High	Low
85:							
Harvey	---	---	---	---	Low	High	Low
Dean	---	---	---	---	Low	High	Low
86:							
Palma	---	---	---	---	Low	High	Low
89:							
Clovis	---	---	---	---	Low	High	Low
Pastura	Petrocalcic	5-20	4-17	Indurated	Low	High	Low
91:							
Pastura	Petrocalcic	5-20	4-17	Indurated	Low	High	Low
Harvey	---	---	---	---	Low	High	Low
92:							
Winona	Bedrock (lithic)	10-20	---	---	Low	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
93:							
Pastura	Petrocalcic	5-20	4-17	Indurated	Low	High	Low
94:							
Palma	---	---	---	---	Low	High	Low
95:							
Flugle	---	---	---	---	Moderate	High	Low

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
96:							
Mido	---	---	---	---	Low	High	Moderate
97:							
Bond	Bedrock (lithic)	6-20	---	---	Low	Moderate	Low
Hagerman	Bedrock (lithic)	20-40	---	---	Low	High	Low
98:							
La Fonda	---	---	---	---	Low	High	Low
Palma	---	---	---	---	Low	High	Low
101:							
Mido	---	---	---	---	Low	High	Moderate
105:							
Manzano	---	---	---	---	Moderate	High	Low
106:							
Darvey	---	---	---	---	Low	High	Low
107:							
Rune	---	---	---	---	Low	Moderate	Low
111:							
La Lande	---	---	---	---	Moderate	High	Low
112:							
Ima	---	---	---	---	Low	High	Low
114:							
Alama	---	---	---	---	Low	High	Low
116:							
Bluhol	---	---	---	---	---	High	High
120:							
Sparks	---	---	---	---	Low	High	Low
121:							
Slaughter	Petrocalcic	9-20	3-9	Indurated	---	Moderate	Low
DAM.							
Dam							
W.							
Water							

Table 20.—Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alama	Fine-silty, mixed, superactive, thermic Ustic Haplocambids
Berwolf	Coarse-loamy, mixed, superactive, thermic Ustic Calciargids
Bluhol	Coarse-loamy, gypsic, thermic Aeric Endoaquepts
Bond	Loamy, mixed, superactive, mesic Lithic Ustic Haplargids
Cardenas	Loamy, mixed, superactive, mesic, shallow Calcic Petrocalcids
Chispa	Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids
Clovis	Fine-loamy, mixed, superactive, mesic Ustic Calciargids
Conger	Loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids
Darvey	Fine-loamy, mixed, superactive, mesic Ustic Haplocalcids
Deama	Loamy-skeletal, carbonatic, mesic Lithic Calciustolls
*Dean	Fine-loamy, carbonatic, mesic Ustic Haplocalcids
Flugle	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
Gabaldon	Fine-silty, mixed, superactive, mesic Cumulic Haplustolls
Gallen	Loamy-skeletal, mixed, superactive, thermic Ustic Haplocalcids
Hagerman	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
Harvey	Coarse-loamy, mixed, superactive, mesic Ustic Haplocalcids
Hassell	Fine, smectitic, thermic Ustertic Haplargids
Hilken	Fine-loamy, mixed, superactive, thermic Ustalfic Petrocalcids
Hollomex	Fine-loamy, gypsic, thermic Typic Torriorthents
Ima	Coarse-loamy, mixed, superactive, thermic Ustic Haplocambids
*Karde	Fine-silty, carbonatic, mesic Ustic Torriorthents
Kolar	Loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids
Lacoca	Loamy, mixed, superactive, calcareous, thermic Lithic Ustic Torriorthents
La Fonda	Fine-loamy, mixed, superactive, mesic Ustic Haplocambids
La Lande	Fine-loamy, mixed, superactive, thermic Ustic Haplocambids
Manzano	Fine-loamy, mixed, superactive, mesic Cumulic Haplustolls
Mido	Mixed, mesic Ustic Torripsamments
Minneosa	Sandy, mixed, thermic Ustic Torrifluvents
Montoya	Fine, smectitic, thermic Chromic Haplotorrerts
Neso	Loamy-skeletal, carbonatic, thermic, shallow Calcic Petrocalcids
Newkirk	Loamy, mixed, superactive, thermic Lithic Ustic Haplargids
Palma	Coarse-loamy, mixed, superactive, mesic Ustic Calciargids
Palo	Loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids
Pastura	Loamy, mixed, superactive, mesic, shallow Ustic Petrocalcids
Pojo	Coarse-loamy, mixed, superactive, thermic Ustalfic Petrocalcids
Redona	Fine-loamy, mixed, superactive, thermic Ustic Calciargids
Reeves	Fine-loamy, gypsic, thermic Ustic Calcigypsids
Regnier	Loamy, mixed, superactive, calcareous, thermic, shallow Ustic Torriorthents
Rune	Fine, mixed, superactive, mesic Cumulic Haplustolls
San Jon	Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids
Silver	Fine, mixed, superactive, mesic Ustic Haplargids
Slaughter	Clayey, mixed, superactive, thermic, shallow Petrocalcic Paleustolls
Sparks	Fine, mixed, superactive, thermic Calcic Paleargids
Travessilla	Loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents
Tucumcari	Fine, smectitic, thermic Ustertic Haplargids
Tuloso	Loamy-skeletal, mixed, superactive, mesic Lithic Haplustepts
Walkon	Fine-loamy, mixed, superactive, thermic Ustic Haplargids
Winona	Loamy-skeletal, carbonatic, mesic Lithic Ustic Haplocalcids

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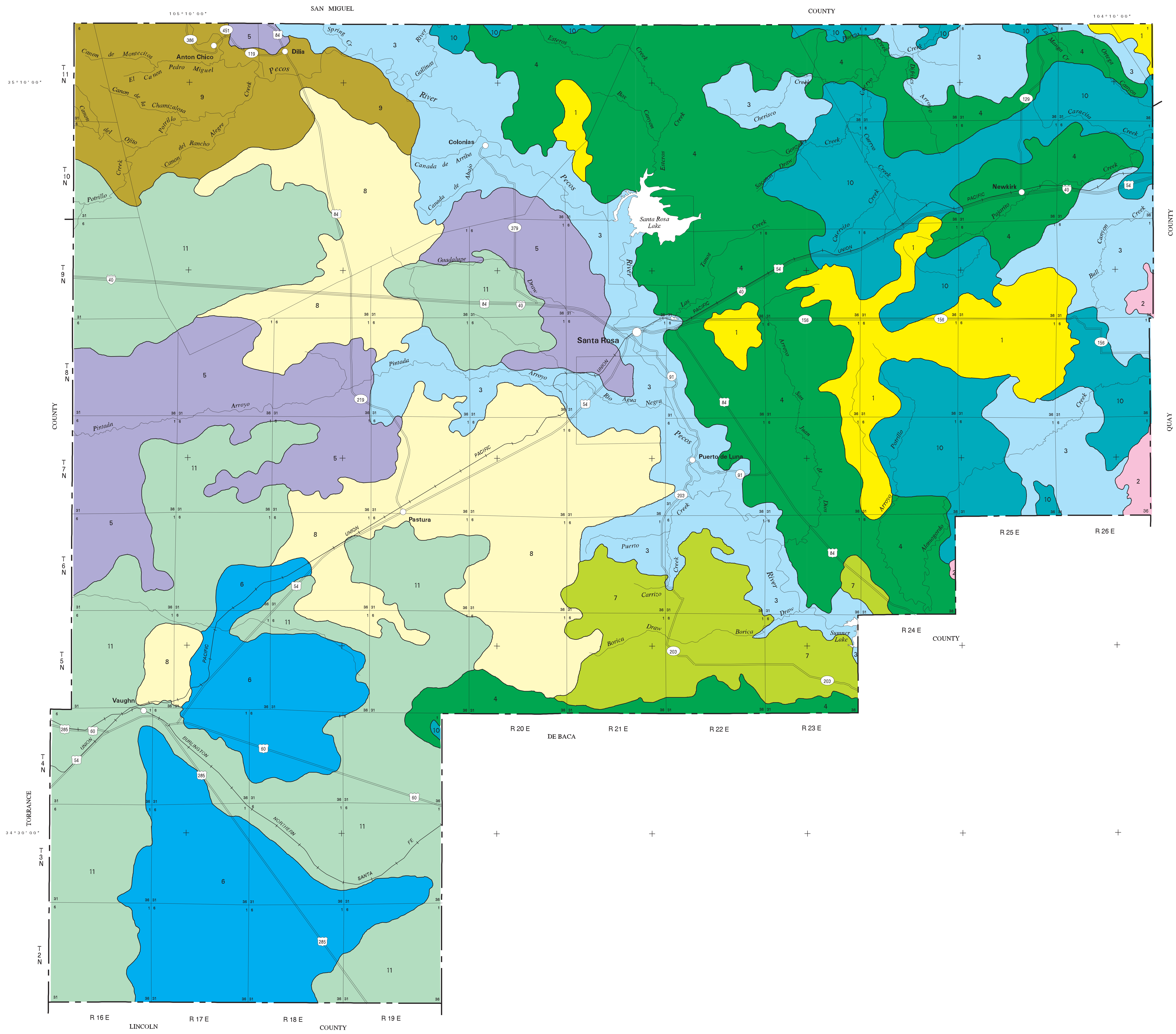


LEGEND

- 1 Redona-Hilken-Conger
- 2 Sparks-Slaughter
- 3 Regnier-Rock outcrop-Lacoca
- 4 Lacoca-San Jon-Rock outcrop
- 5 Travessilla-Hagerman-Rock outcrop
- 6 Winona-Gabaldon
- 7 Palo-Neso-Hilken
- 8 Pastura-Harvey-Cardenas
- 9 Tuloso-Flugle-Deama
- 10 Tucumcari-Chispa-La Lande
- 11 Clovis-Harvey-Palma

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NEW MEXICO AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
GUADALUPE COUNTY, NEW MEXICO

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:230000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

SOIL LEGEND

SYMBOL	NAME
10	Regnier-Rock outcrop-Lacoca complex, 30 to 80 percent slopes
11	Tucumcari-Hassell clay loams, 0 to 5 percent slopes
13	Tucumcari-Redona association, 0 to 5 percent slopes
14	Kolar-Neso association, 0 to 5 percent slopes
15	Hilken-Palo fine sandy loams, 0 to 2 percent slopes
16	Redona-Berwolf fine sandy loams, 1 to 5 percent slopes
17	Lacoca-Rock outcrop complex, 10 to 25 percent slopes
19	Gallen very gravelly sandy loam, 5 to 30 percent slopes
20	Walkon-Newkirk-San Jon fine sandy loams, 1 to 7 percent slopes
22	Chispa-Redona association, 1 to 5 percent slopes
23	Minneosa very fine sandy loam, 0 to 2 percent slopes
25	Ima-La Lande fine sandy loams, 2 to 10 percent slopes
26	Tucumcari-Montoya complex, 0 to 3 percent slopes
27	San Jon-Lacoca-Rock outcrop complex, 1 to 10 percent slopes
28	Lacoca-San Jon-Rock outcrop complex, 5 to 20 percent slopes
29	Pojo-Neso-Berwolf association, 0 to 3 percent slopes
30	La Lande-Chispa complex, 3 to 15 percent slopes
32	Regnier-Lacoca-Rock outcrop complex, 3 to 25 percent slopes
33	Redona-Hilken loams, 0 to 2 percent slopes
34	Palo-Neso complex, 0 to 2 percent slopes
35	Hassell-Regnier clay loams, 0 to 3 percent slopes
36	Alama silt loam, 1 to 5 percent slopes
37	Hollomex-Reeves complex, 1 to 10 percent slopes
50	Conger-Hilken loams, 0 to 3 percent slopes
55	Conger-Redona association, 0 to 5 percent slopes
56	Karde loam, 3 to 10 percent slope
57	Tuloso-Flugle association, 1 to 15 percent slopes
58	Deama cobbly loam, 3 to 25 percent slopes
70	Manzano loam, 0 to 2 percent slopes, rarely flooded
71	Clovis fine sandy loam, 0 to 3 percent slopes
72	Harvey-Darvey complex, 1 to 5 percent slopes
73	Winona-Gabaldon complex, 0 to 15 percent slopes
75	Pastura-Silver-Gabaldon complex, 0 to 5 percent slopes
76	Pastura-Clovis association, 0 to 8 percent slopes
77	Cardenas-Palma loamy fine sands, 0 to 3 percent slopes
79	Travessilla-Rock outcrop complex, 30 to 75 percent slopes
80	Travessilla-Hagerman-Rock outcrop complex, 1 to 15 percent slopes
81	Darvey-Silver association, 0 to 3 percent slopes
82	Clovis loam, 0 to 3 percent slopes
85	Harvey-Dean loams, 3 to 15 percent slopes
86	Palma loamy fine sand, 1 to 5 percent slopes
89	Clovis-Pastura association, 0 to 3 percent slopes
91	Pastura-Harvey association, 0 to 8 percent slopes
92	Winona-Rock outcrop complex, 15 to 30 percent slopes
93	Pastura loam, 0 to 5 percent slopes
94	Palma fine sandy loam, 0 to 5 percent slopes
95	Flugle loamy fine sand, 1 to 5 percent slopes
96	Mido loamy fine sand, 1 to 10 percent slopes
97	Bond-Hagerman complex, 1 to 10 percent slopes
98	La Fonda-Palma fine sandy loams, 5 to 15 percent slopes
101	Mido loamy fine sand, 0 to 1 percent slopes
105	Manzano loam, 0 to 2 percent slopes
106	Darvey loam, 0 to 2 percent slopes
107	Rune clay loam, 0 to 1 percent slopes
111	La Lande loam, 0 to 2 percent slopes
112	Ima sandy loam, 0 to 2 percent slopes
114	Alama silt loam, 0 to 1 percent slopes
116	Bluhol loam, 0 to 2 percent slopes
120	Sparks loam, 0 to 2 percent slopes
121	Slaughter loam, 0 to 2 percent slopes
DAM	Dam
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label) — Davis Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 173
- Federal — 287
- State — 52
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE
(normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small (Named where applicable) — water

PITS — w

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban area) (occupied)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water, w
- Intermittent — int, i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — 34 35

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

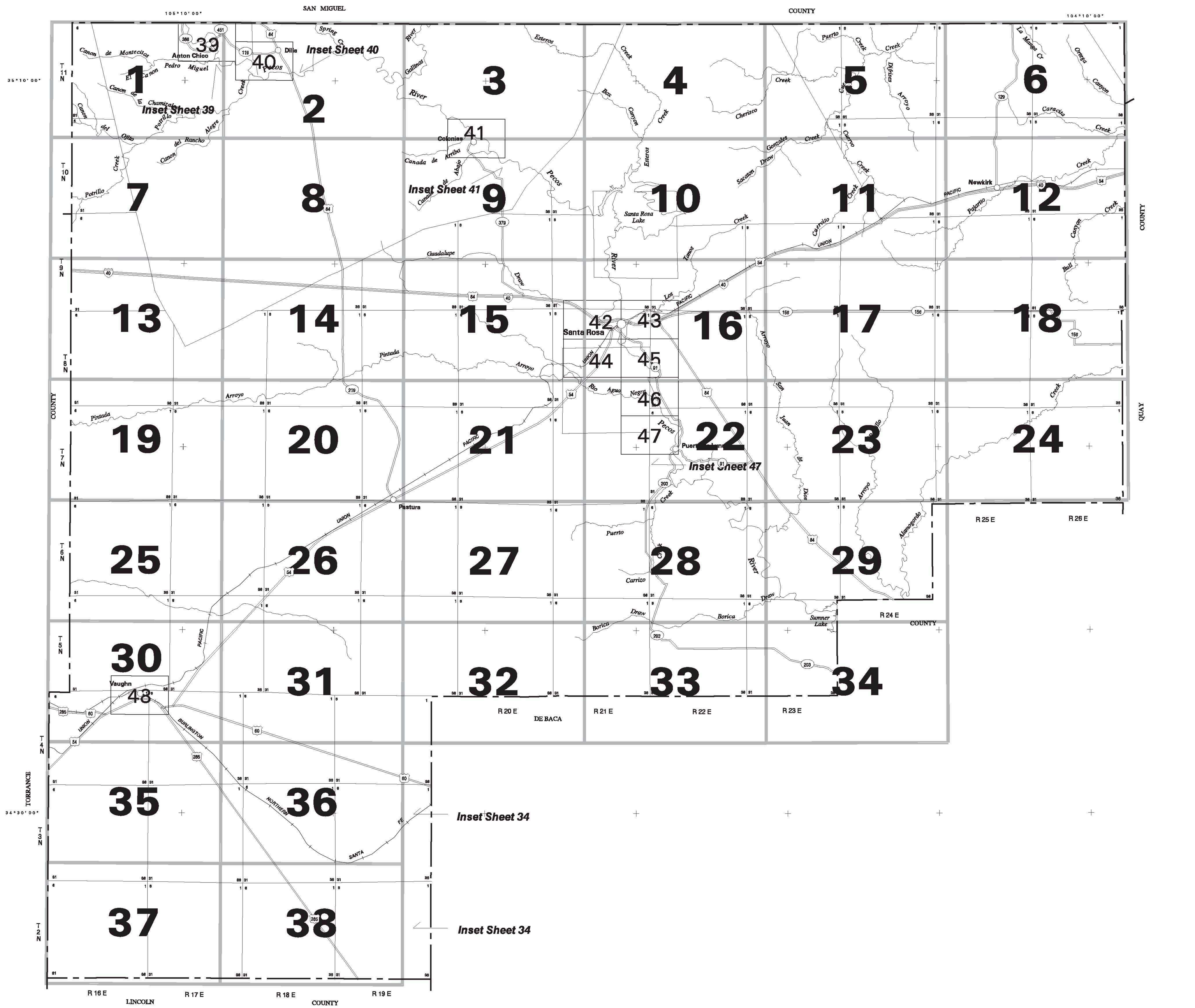
SOIL SAMPLE (normally not shown)

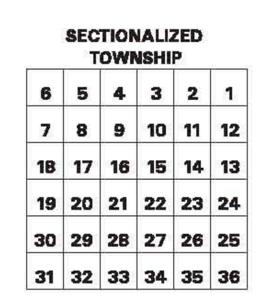
MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

High Intensity Areas

- Sheet 39 -- Inset of Sheet 1
- Sheet 40 -- Inset of Sheet 2
- Sheet 41 -- Inset of Sheets 3, 9
- Sheet 42 -- Inset of Sheets 15,16
- Sheet 43 -- Inset of Sheet 16
- Sheet 44 -- Inset of Sheets 15,16
- Sheet 45 -- Inset of Sheet 16
- Sheet 46 -- Inset of Sheet 22
- Sheet 47 -- Inset of Sheet 22
- Sheet 48 -- Inset of Sheet 30





INDEX TO MAP SHEETS
GUADALUPE COUNTY, NEW MEXICO

MILES

KILOMETERS

SCALE = 1:230000

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 2

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7

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 8

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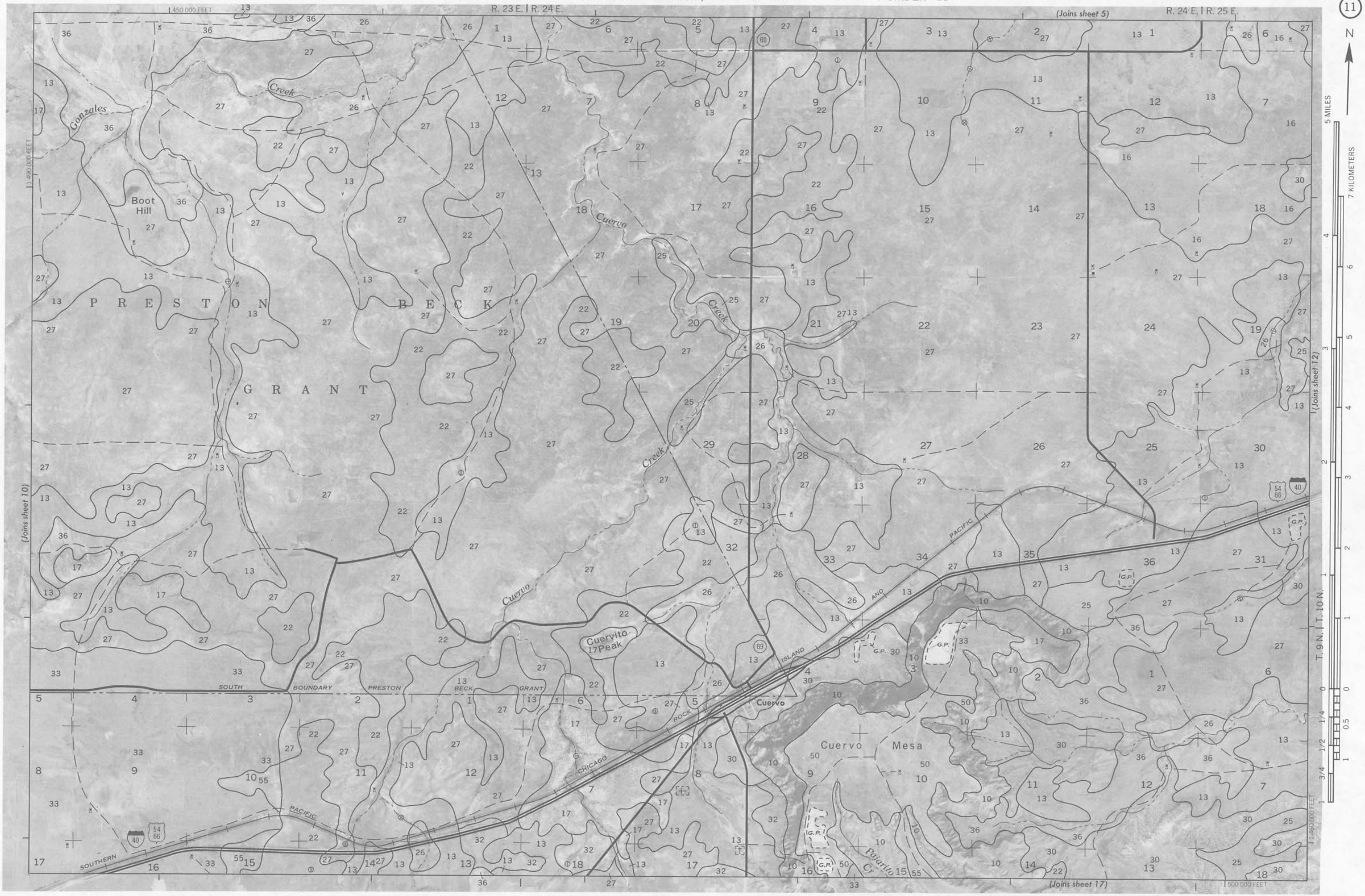

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 12

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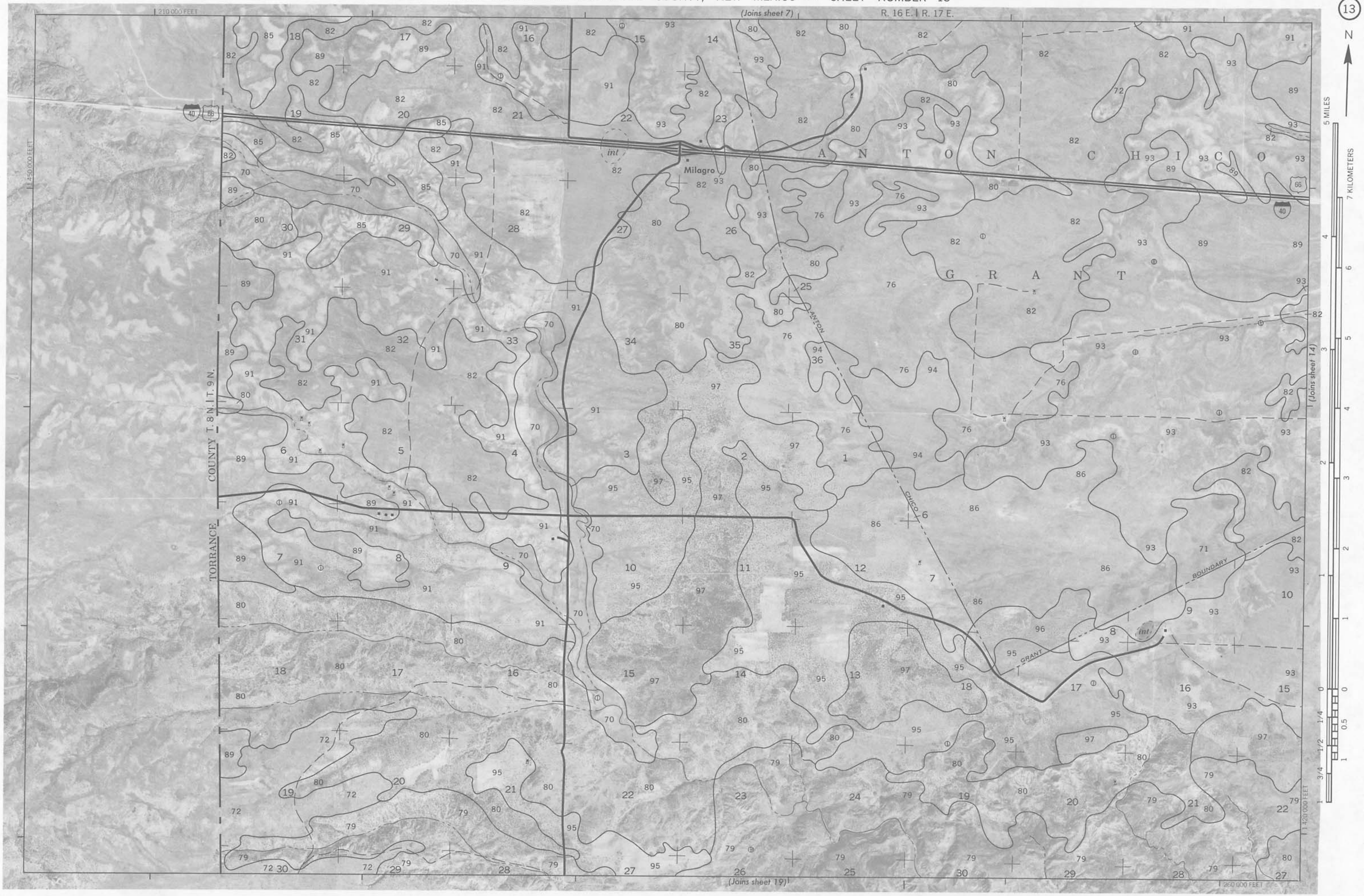

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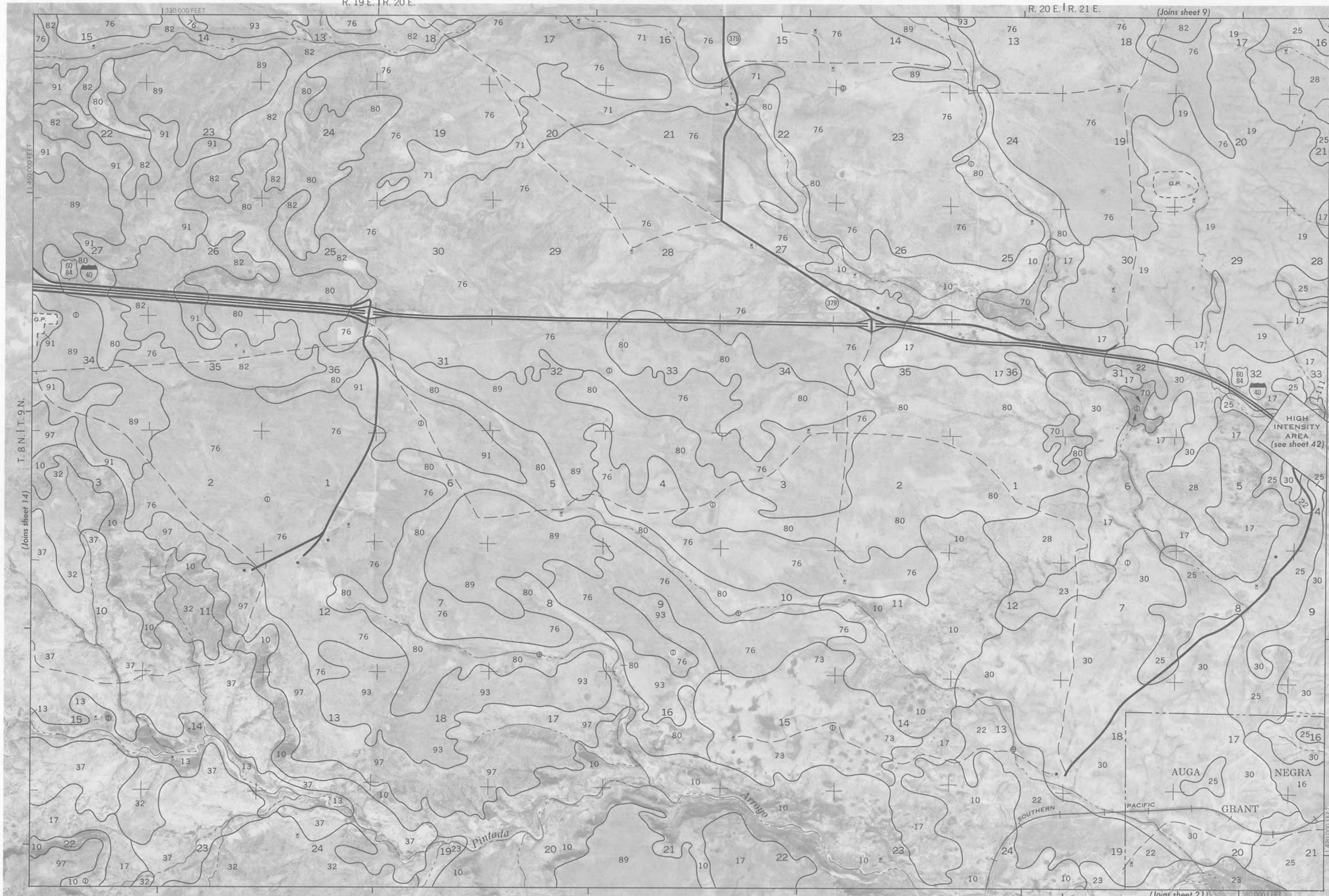

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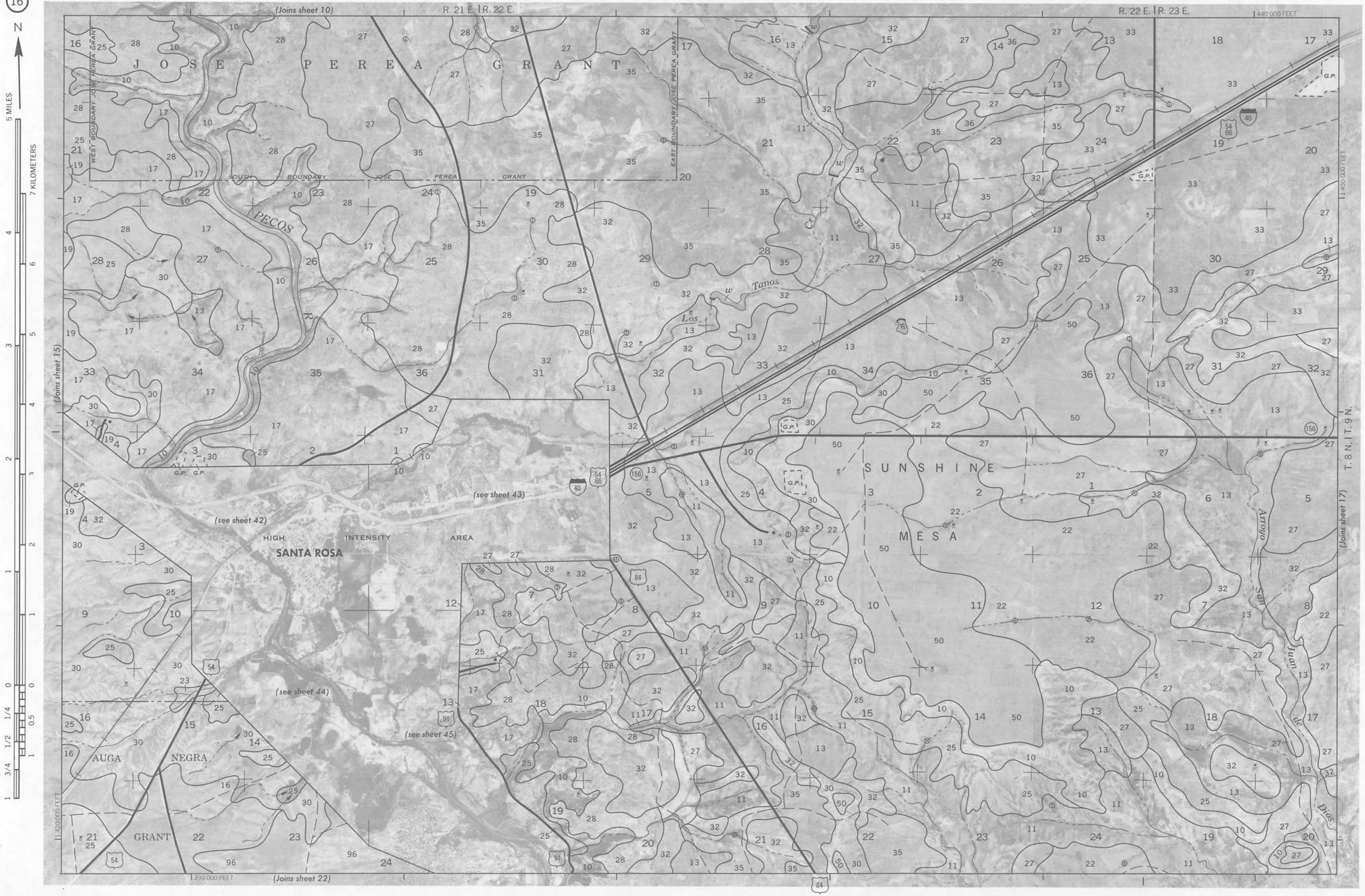
SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 16



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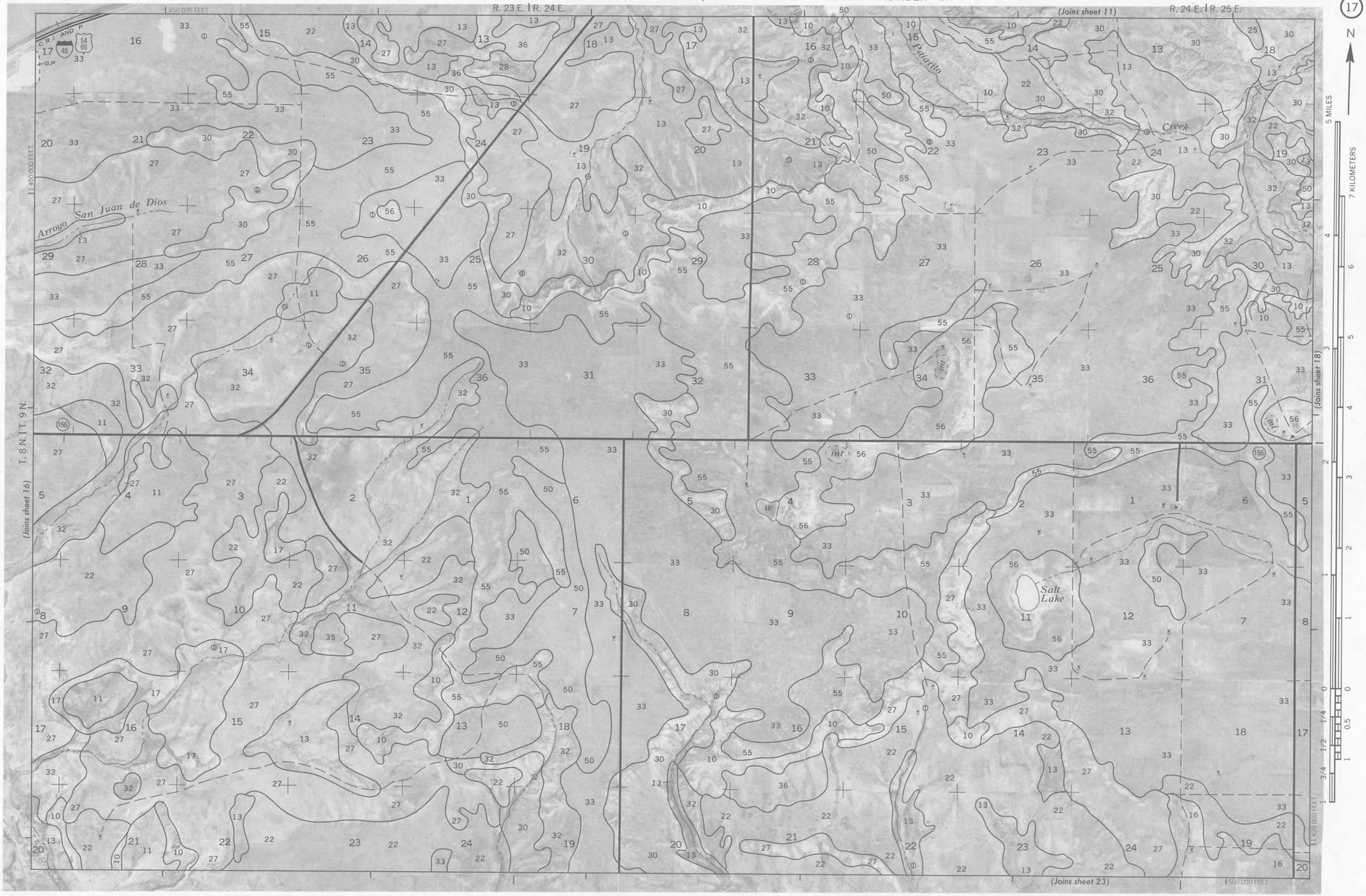

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 19

19

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 20

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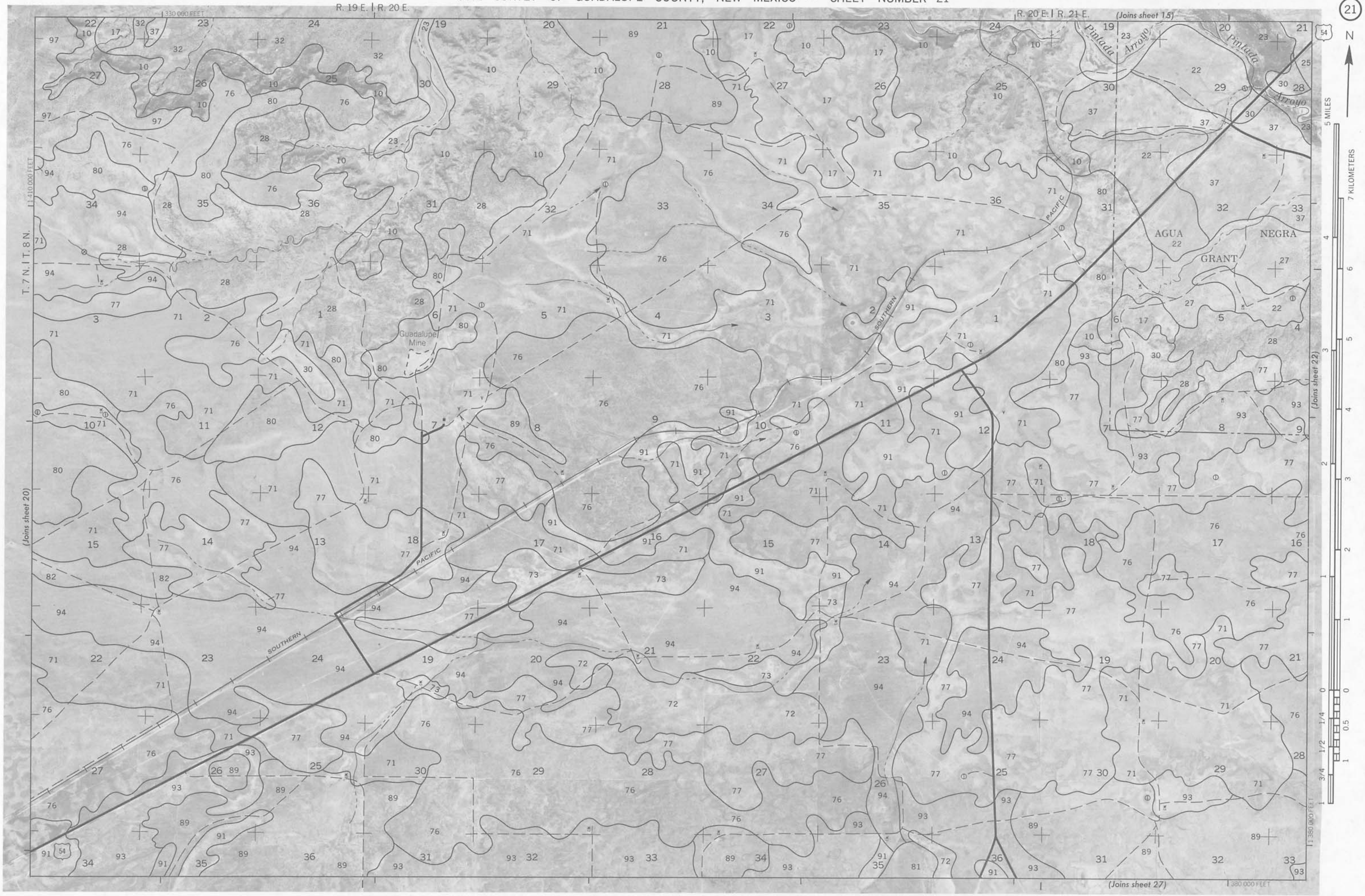

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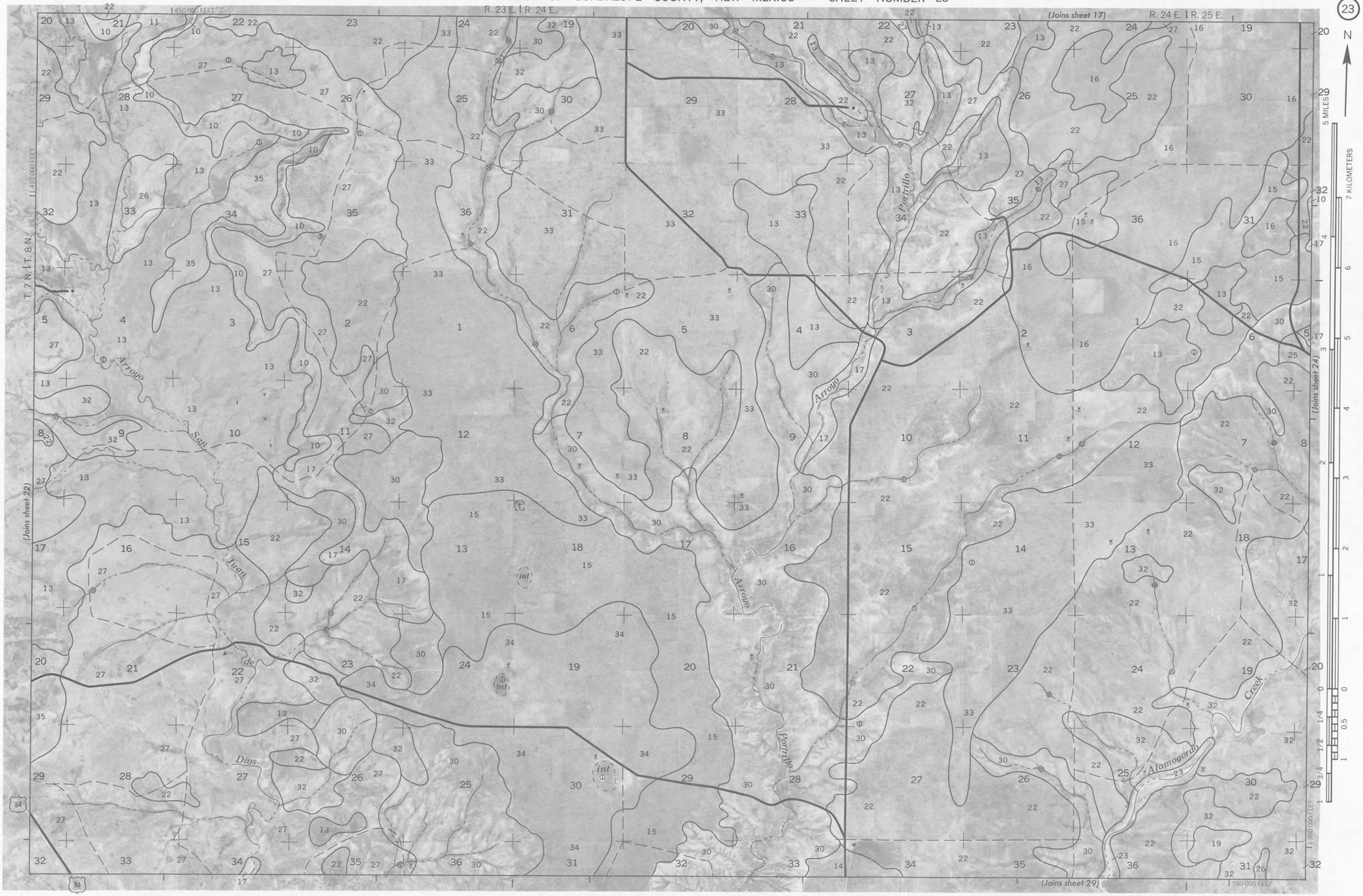

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 24

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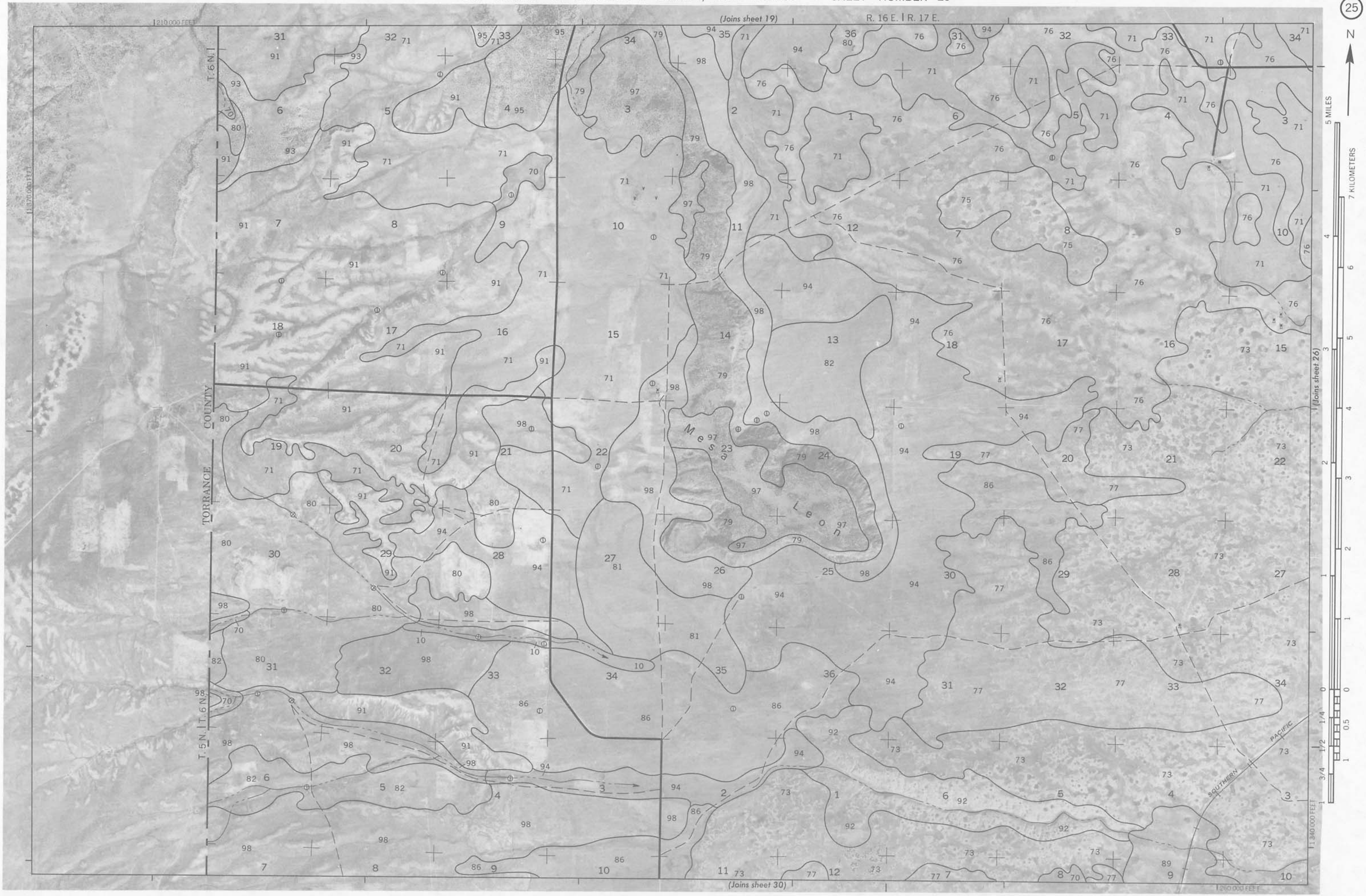

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SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 27

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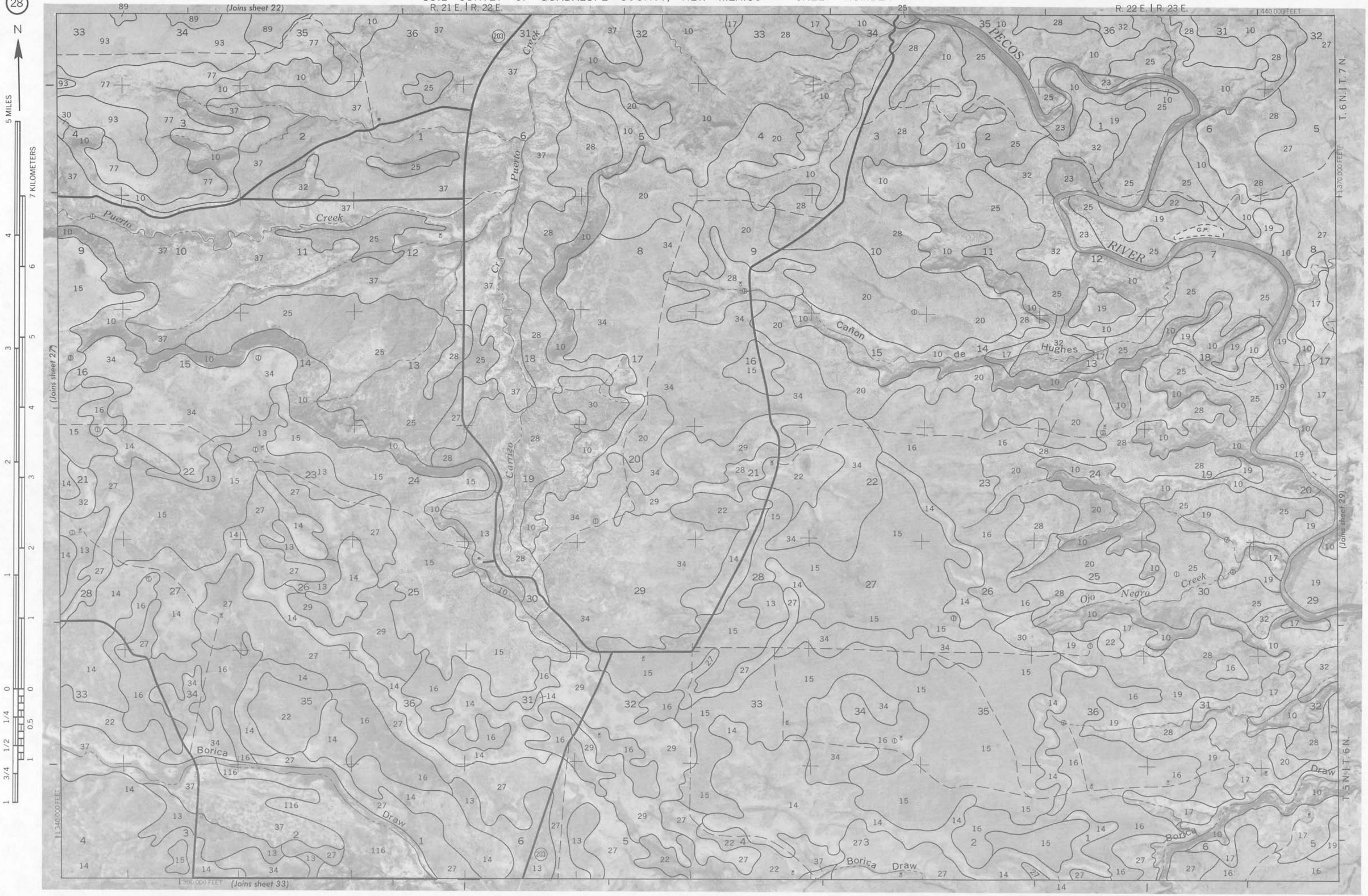

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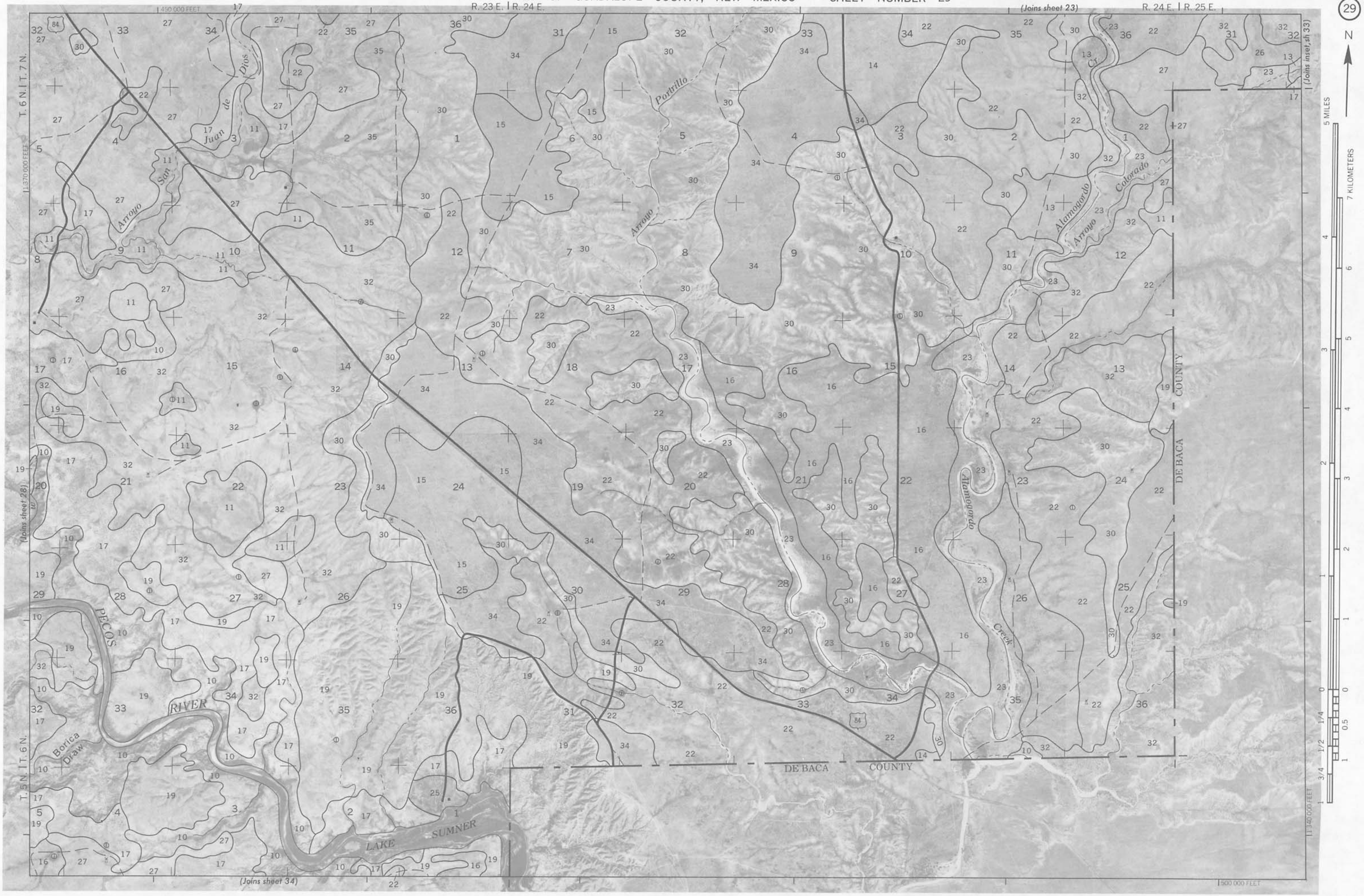

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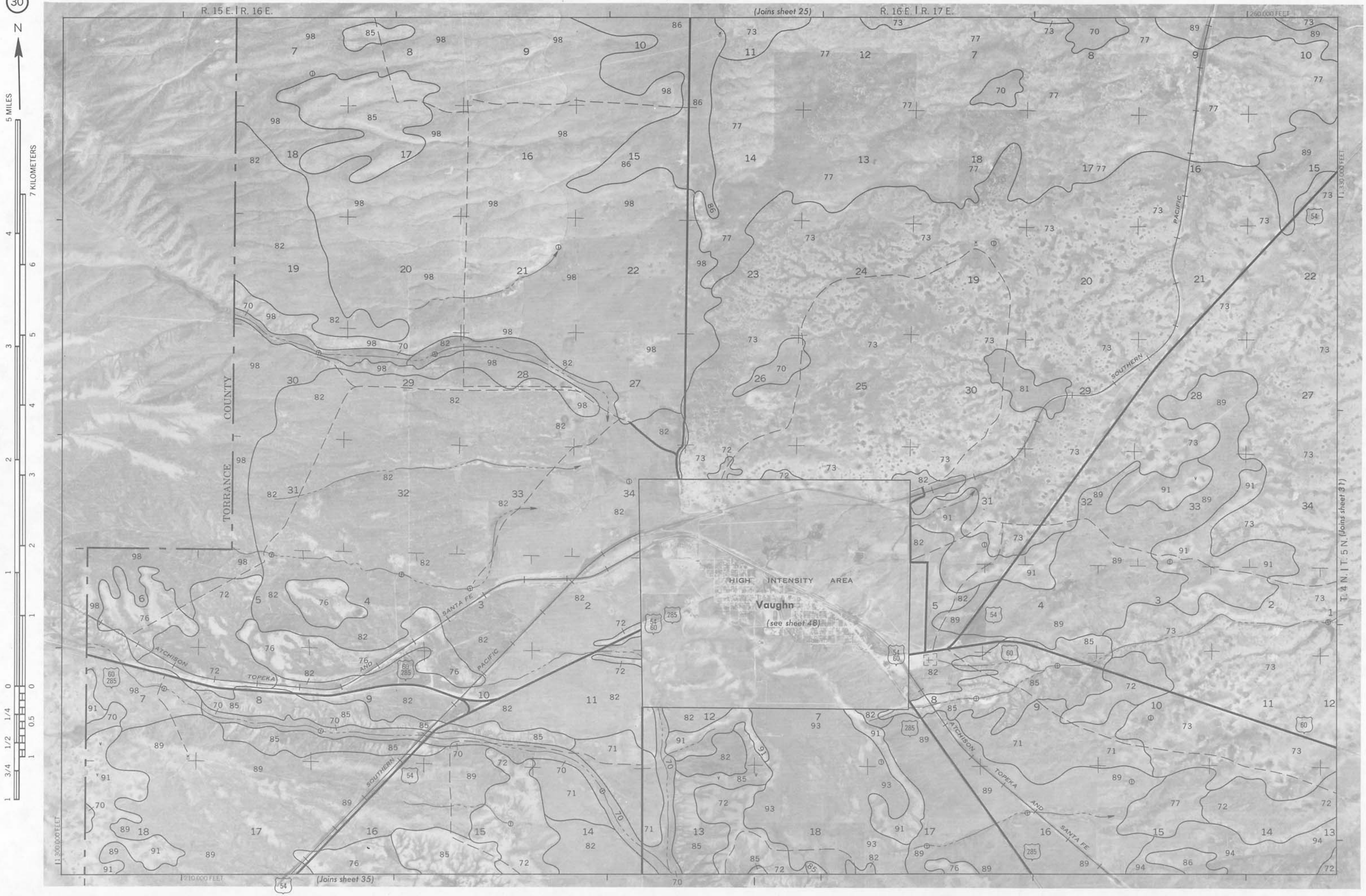

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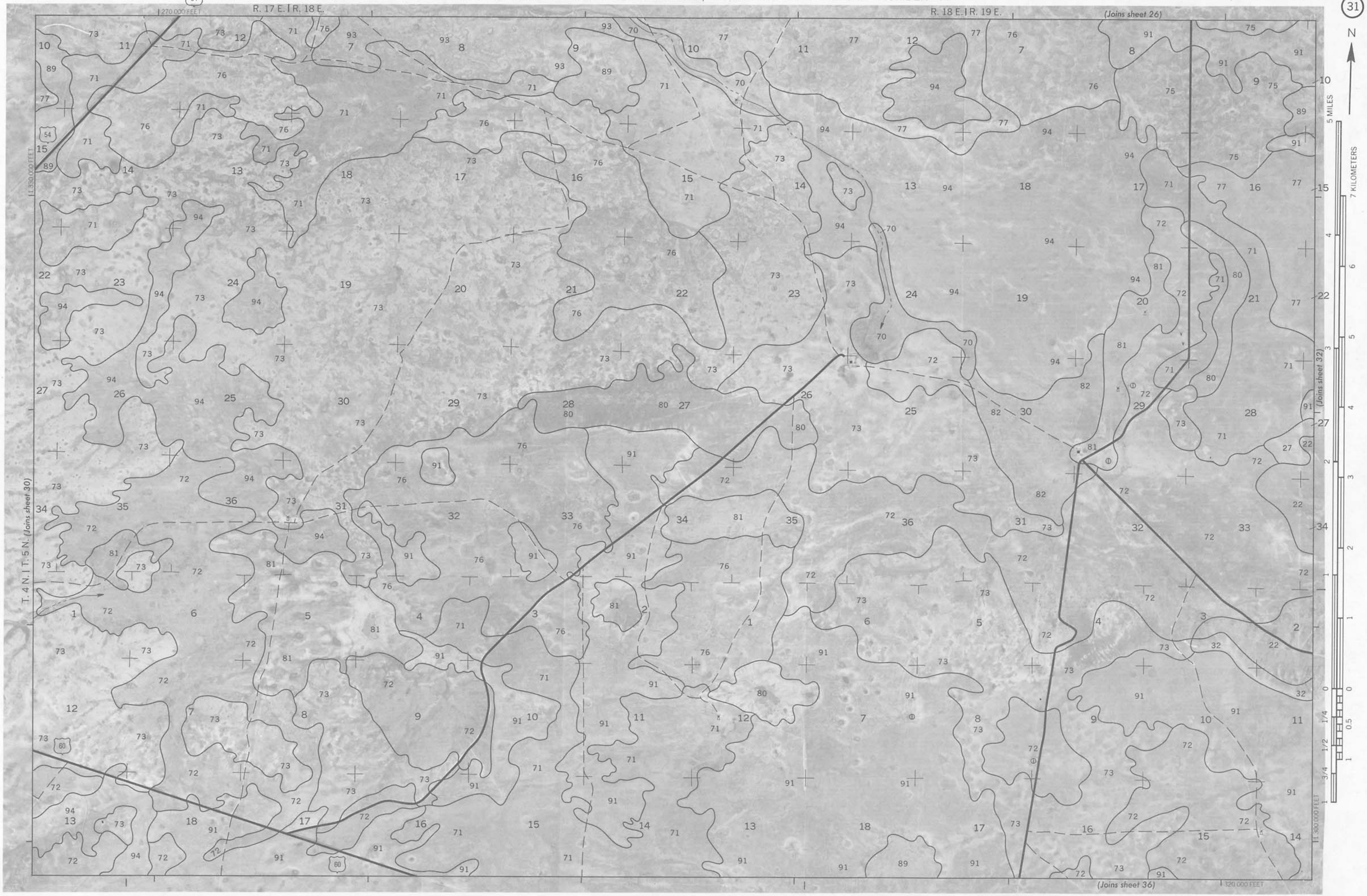

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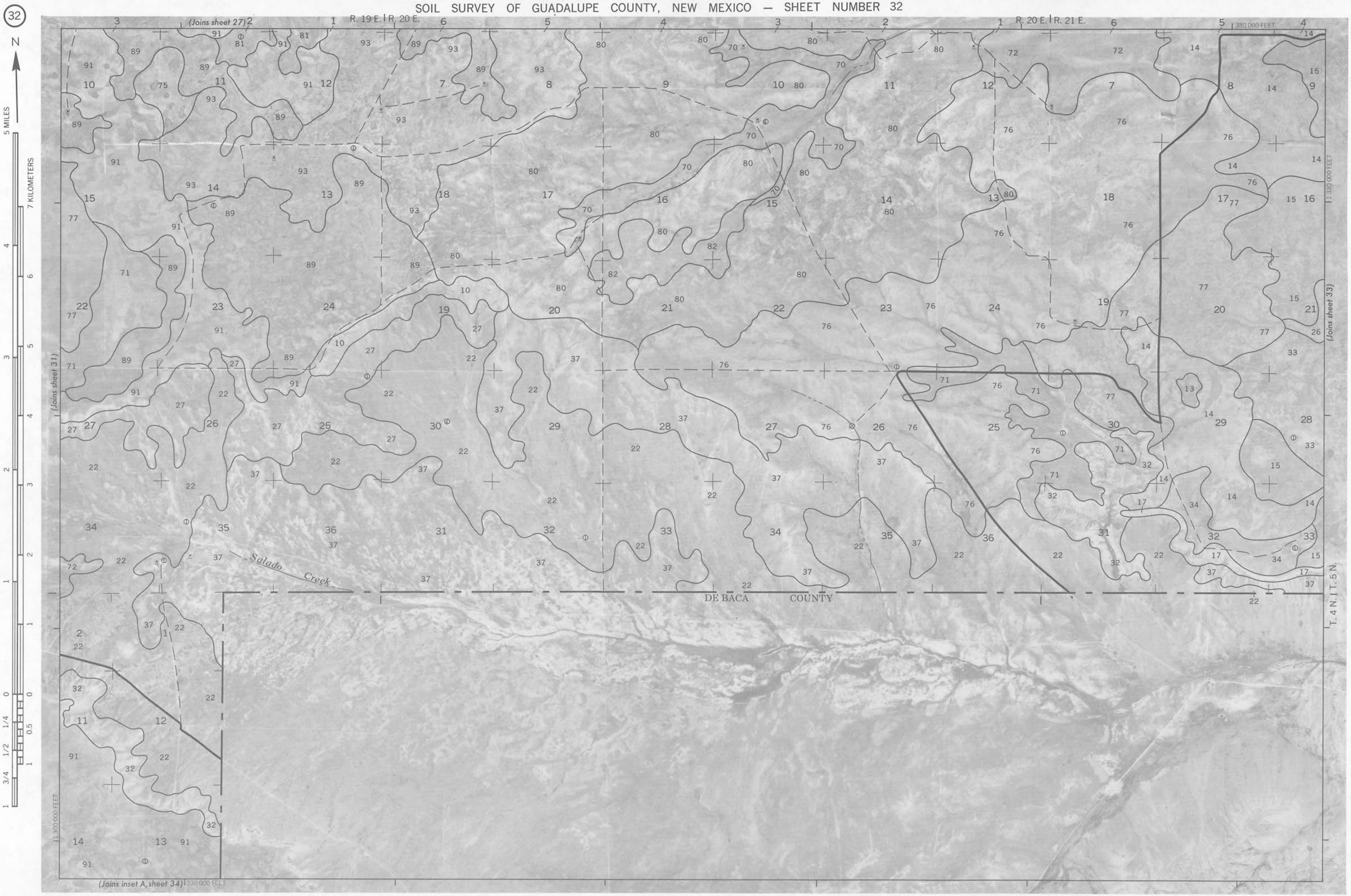

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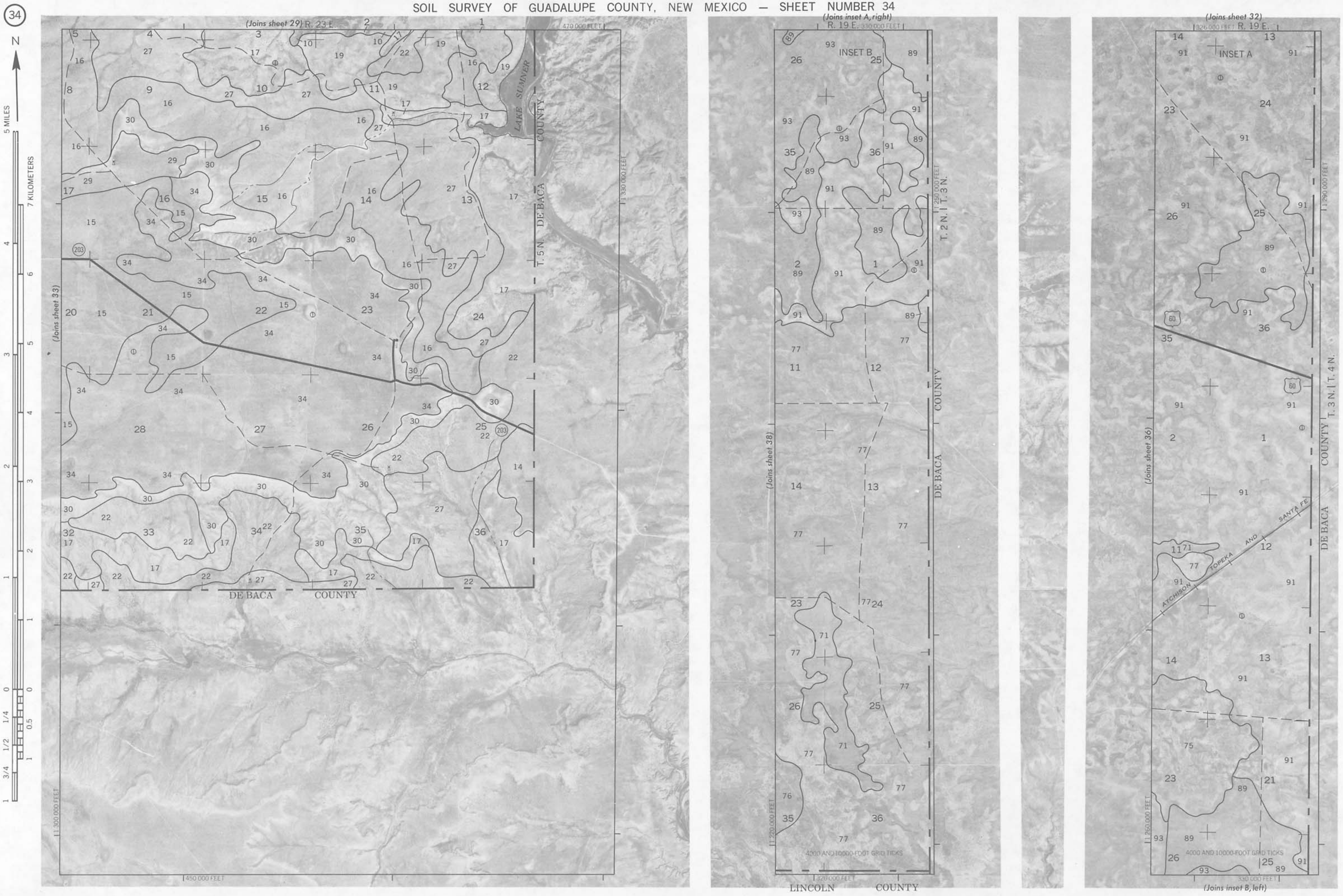
SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 34



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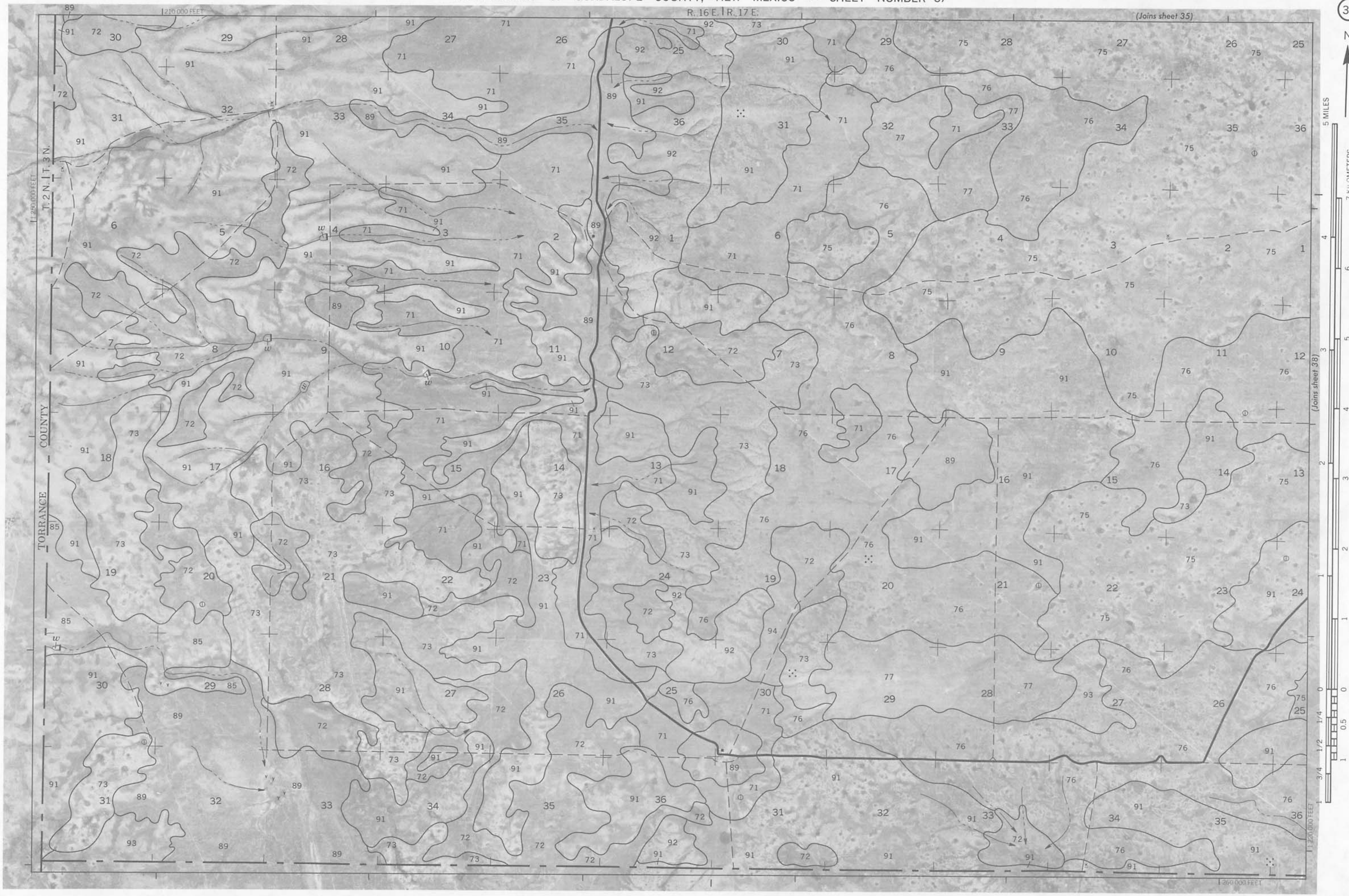

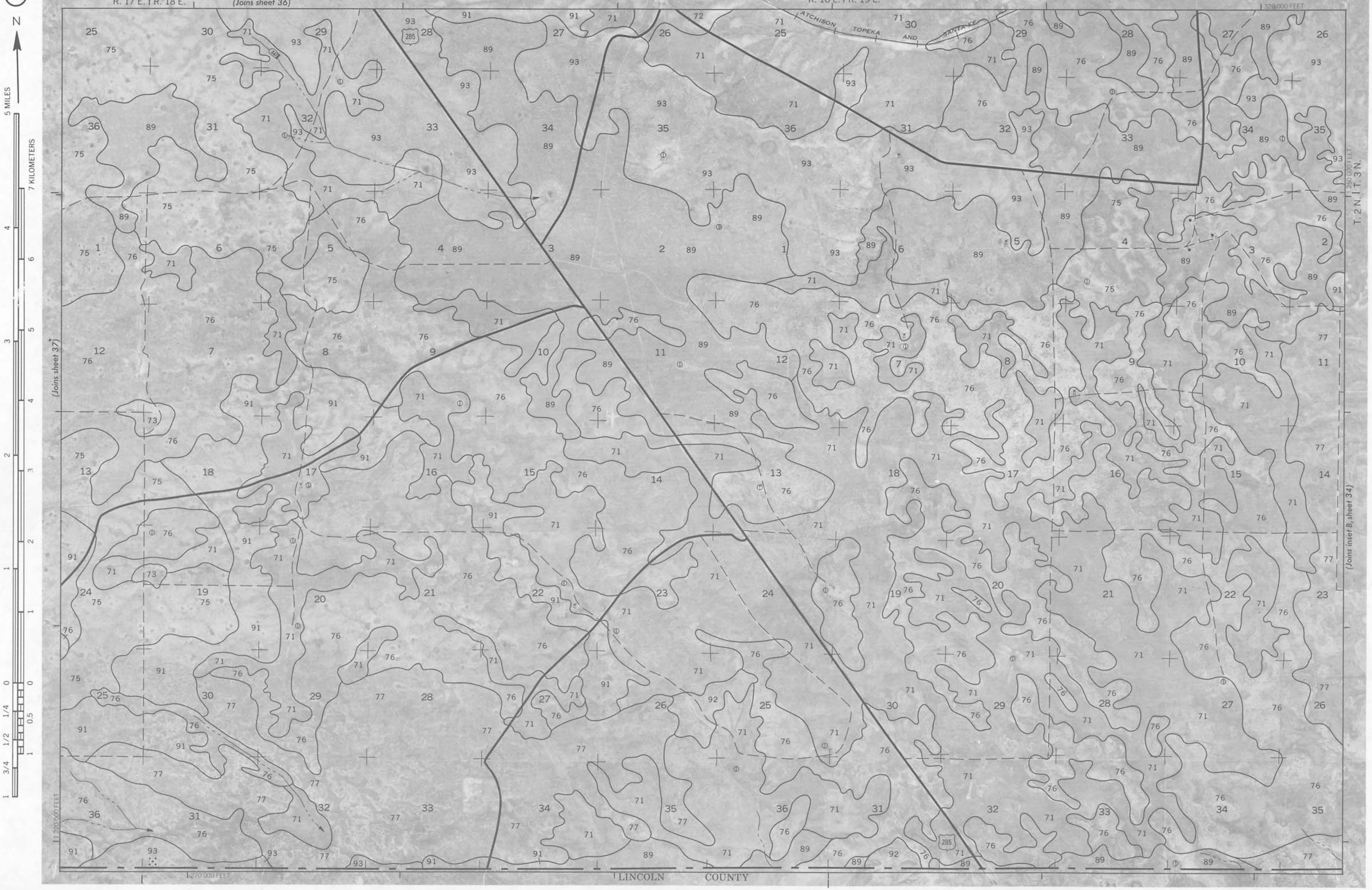

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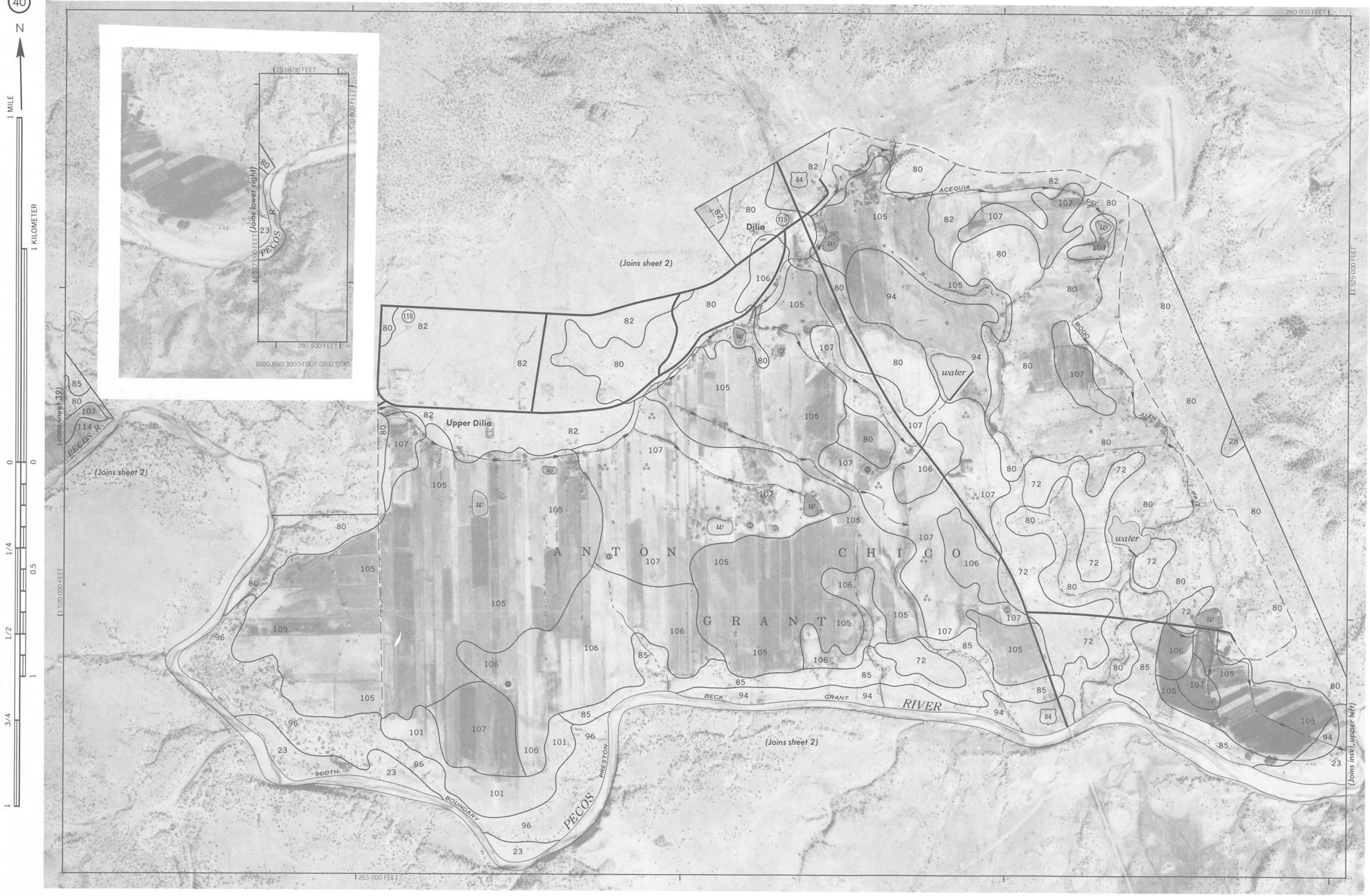
SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 40



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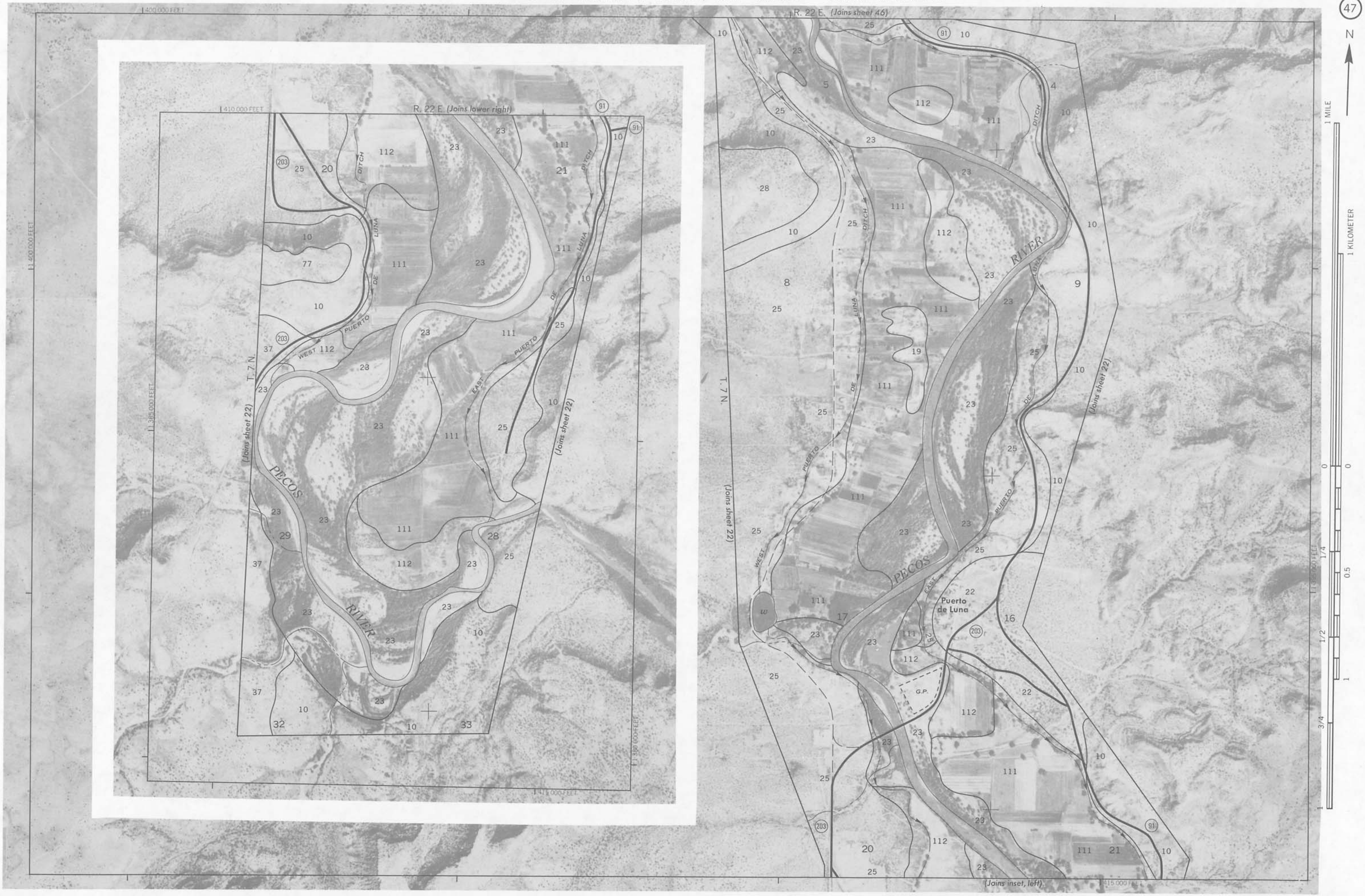
SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 46

Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are controlled photomosaics prepared from 1978 aerial photography.



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are controlled photomosaics prepared from 1978 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF GUADALUPE COUNTY, NEW MEXICO — SHEET NUMBER 48

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are controlled photomosaics prepared from 1978 aerial photography.